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the Iron Age

E NATIONAL METALWORKING WEEKLY

May 14, 1953

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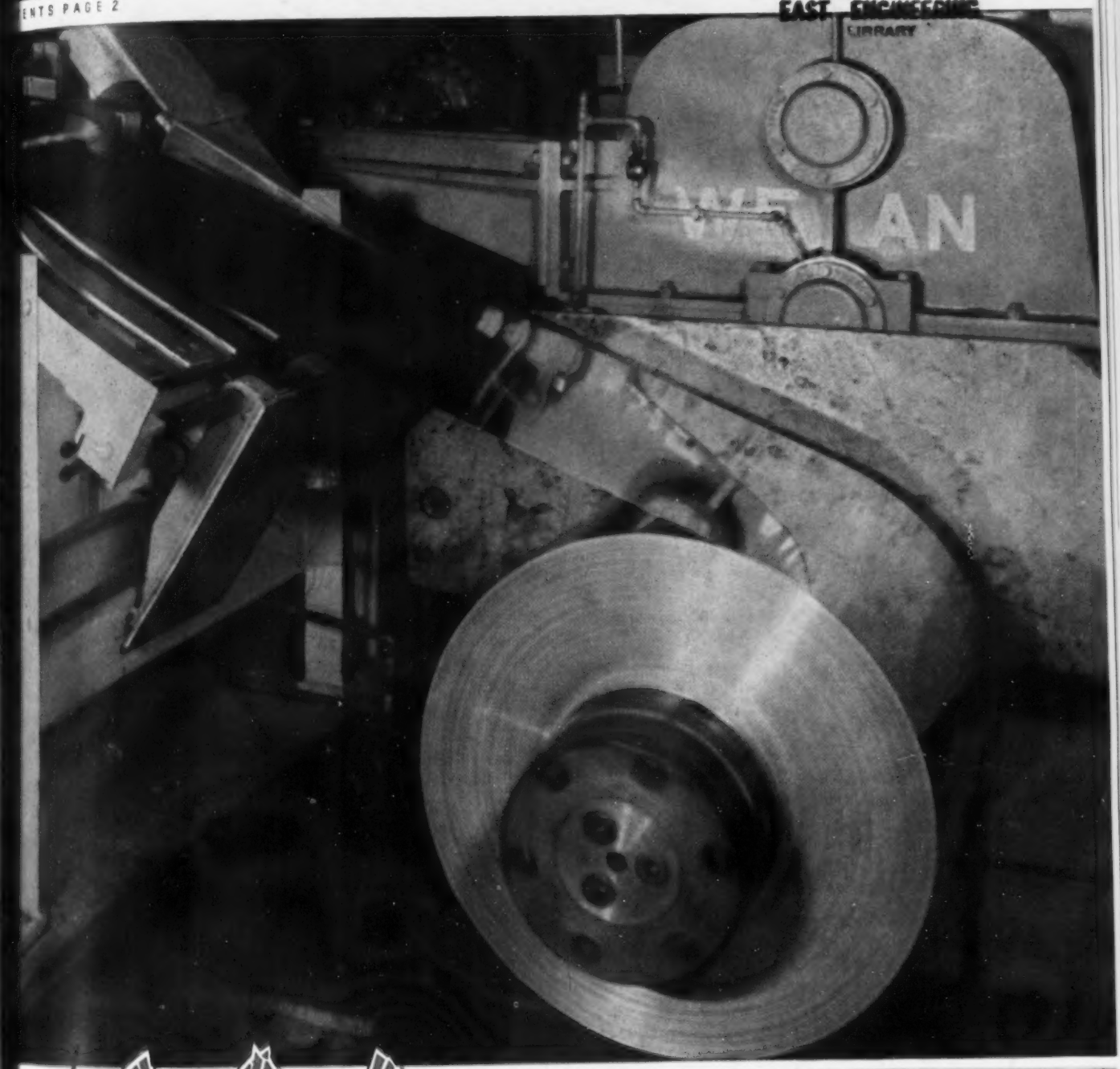

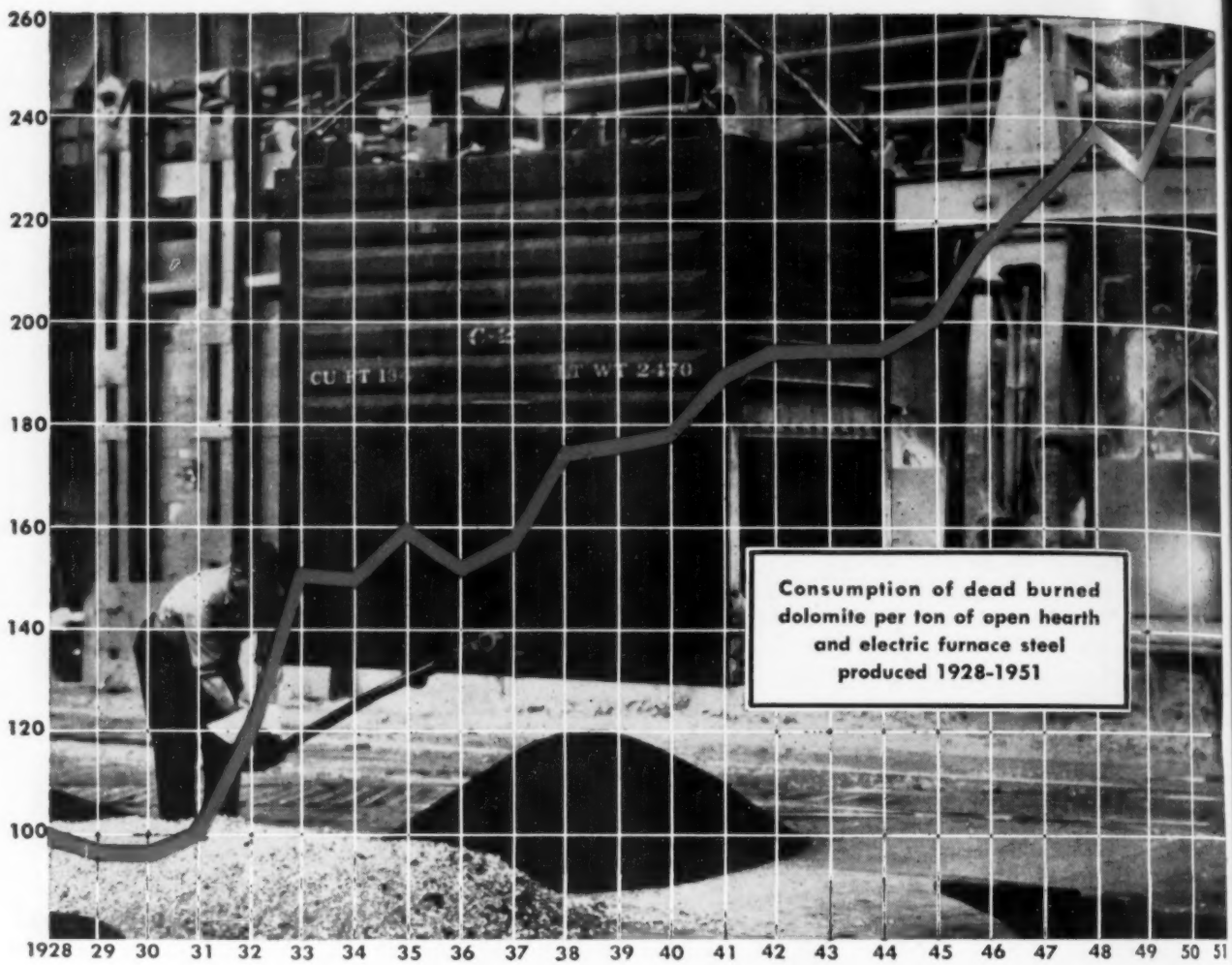

calcined dolomite vs. dead burned dolomite

THE price of calcined dolomite approaches that of dead burned dolomite. But in terms of effectiveness as a hearth refractory, calcined dolomite has most of the shortcomings of raw dolomite. However, it lacks the effectiveness of this low priced material for routine drying of bottom.

Calcined dolomite is often called "single burned", just as dead burned dolomite is referred to as "double burned". This outdated nomenclature originated years ago when raw dolomite was first calcined (fired to a temperature high enough to drive off CO_2) and then refired at higher temperatures to obtain dense, thoroughly shrunk granules containing essentially crystalline magnesia and lime.

Calcined dolomite, with a density of 60 to 80 pounds as opposed to 120 pounds per cubic foot for dead burned dolomite, has a high porosity. It reacts rapidly with atmospheric moisture and carbon dioxide. Thus, slaking in transit and storage causes excessive fines. Fines not only pose a dust problem for furnace personnel, but when swept through the furnace by combustion gases, result in damage to all refractories, both below and above floor level.

Lacking density and an integral coalescing agent, calcined dolomite is highly vulnerable to attack during the initial stage of the heat. Calcine thus removed increases slag volume. Magnesia from the calcine leads to viscous slags which take manganese and iron oxides into solid solution, rendering them ineffectual in their important role of refining agents.

Today few steel plants use calcined dolomite. Thus, practice proves the reasoning of science—in increasing consumption of dead burned dolomite.

A pioneer in the manufacture of dead burned dolomite, Basic Refractories Incorporated fulfills its responsibility as a supplier of this essential hearth refractory through a continuing program of product research and quality control and by anticipating, through increased and improved production facilities, the ever expanding requirements of the steel industry for Magnefer and Syndolag.

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95%

Of All Alloy Steel Jobs Can Be Handled With Standard Grades

Are you using special grades of alloy steel for jobs that can be done just as well with standard grades?

Applications, either military or civilian, that really justify the use of special steels are relatively few. And these are generally cases where resistance to heat, corrosion, and low-temperature impact are the main considerations.

In practically all other engineering applications AISI standard alloy steels will quench out to the desired hardness. One major advantage of standard grades is that chemical ranges generally fall within closer limits than those of other-than-standard grades.

Standard methods of heat-treatment can be used, and property ranges can be anticipated to a close degree. And when you adhere to standard grades, you will usually get faster delivery service; and your inventories will be lower, with less capital tied up in slower-moving special grades.

We at Bethlehem Steel manufacture and sell the entire range of AISI grades and special-analysis steels as well as all of the standard carbon steels. Our metallurgists are experienced in solving problems that pertain to all types of steel, and you can count on them for unbiased advice.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM ALLOY STEELS

BETHLEHEM STEEL

the Iron Age

Vol. 171, No. 20, May 14, 1953

* Starred items are digested at the right.

EDITORIAL

NEWS OF INDUSTRY

NEWS ANALYSIS

TECHNICAL ARTICLES

MARKETS & PRICES

REGULAR DEPARTMENTS

INDEX OF ADVERTISERS

THE IRON AGE, published every Thursday by the CHILTON CO. (INC.), Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the act of March 3, 1879. $8 yearly in United States, its territories and Canada; other Western Hemisphere Countries, $15, other Foreign Countries, $25 per year. Single copies, 25¢. Annual Review and Metal Industry Facts Issue, $2.00. Cables: "Ironage," N. Y.

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DIGEST of the

NEWS DEVELOPMENTS

WEST'S AUTOMAKERS STRAIN TO FILL ORDERS—P. 71
California auto industry which is now turning out 12 pct of U. S. cars is expanding to meet pressing demand. Chrysler more than doubled California assembly operations last year and expects to continue expansion. Kaiser may use Willys Los Angeles plant for assembly. Most parts are shipped from Detroit.

McDONALD WON'T BE A PUSHOVER ON WAGES—P. 73
Odds are against a strike on this year's steel wage issue, but United Steel Workers could call a walkout if backed into a corner, regardless of rank-and-file sentiments. USW boss McDonald resents speculation that he will be a pushover in first set-to with industry. Settlement expected at wage hike of 10¢.

ADOPTION OF THE VANCE TOOL PLAN NEARS—P. 74
The plan to stockpile war production facilities rather than actual weapons seems sure to be adopted in modified form. Opposition has been greatly exaggerated in some circles, says Washington. The President doesn't see how the plan could be scrapped. But funds will probably be trimmed.

MAKE MORE NICKEL PLATED PIPE FOR AEC — P. 82
Production of nickel plated steel pipe for AEC will soon increase sharply. Pipe will range from 2 to 54-in. in diam. Biggest selenium rectifier will furnish dc power for plating. Semi-continuous plating process provides excellent bond between steel and nickel. Pipe can be fabricated after plating.

FORD MOTOR CO. PASSES HALF CENTURY MARK—P. 88
The future is where Ford people are keeping their minds—they haven't the time to reminisce about the firm's first 50 years. Firm has spread out into 28 states and expansion is still continuing. Key to the next 50 years is the $80 million research center to be dedicated next week.

MANUFACTURERS VOICE CHOICE ON STANDBYS—P. 99
Industrial manufacturers in reply to survey by Munitions Board and military departments favor moving defense production equipment to storage sites near plants as best standby program. Regard plan as most practical compromise on speed of production and economy. Cost of program would be about $75 million.

the Week in Metalworking

ENGINEERING & PRODUCTION

LIMITED NICKEL BRINGS ON NEW STAINLESS—P. 129
Manganese can replace nickel in stainless steels. One such chromium-maganese grade is already in tonnage production and use. Other possible alternates for 18-8 types 301, 302 and 304 have also been developed. If industry gets such steels approved, our nickel supply can be stretched out.

SELECT JOB-FITTED COOLANT CLEANING UNITS—P. 133
Higher machining speeds and finer finishes have increased the demand for coolant cleaning equipment. The devices offered have caused some confusion among users. Careful study of the cleaning problem should be made before selecting a unit. The degree of cleanliness desired is an important consideration.

CARBON-14 USED TO MEASURE CASE DEPTH—P. 138
Carbon penetration in case-hardened steels can be measured more accurately by an autoradiographic method using carbon-14 and X-ray film. Radioactive carbon-14, mixed with carbon-12, emits beta rays which signal the location of carbon in steel. Radiations produce a pattern of carbon distribution on film.

HEAT TREATING SPEEDED BY GOOD HANDLING—P. 141
Good materials-handling methods have eliminated many problems and much manual labor at Ford's River Rouge plant. Novel units include a hoist and rollover unit and a vibrator-actuated feed trough. Up to 3200 lb of small parts can be handled in the controlled-atmosphere continuous furnaces.

HOW TO INCREASE THE LIFE OF CUTTING DIES—P. 144
Factors which determine cutting die life must be studied if methods are to be found to control them. Tools designed to simple, regular shapes wear longer. The thickness of a die plate must allow for the required number of sharpenings. Use of a more expensive grade of steel increases tool life.

NEXT WEEK—COLD TREATMENTS IMPROVE PRODUCTS
Low-temperature treating of metal products aids fabrication in many ways. Dimensional stabilization of precision parts, improved strength and accuracy of tools and better machinability are among its advantages. Temperatures down to −150°F are usually sufficient for good results.

MARKETS & PRICES

SCRAP SHORTAGE IS OF DEMAND THIS TIME—P. 75
The old scrap cycle has been dislocated by buyer's spring apathy. Formerly mills purchased heavily at this time of year but scrap stockpiles accumulated during last summer's steel strike are still high. Prices of both quality and steelmaking grades have dropped in all scrap areas.

STEEL MILLS BOOKED THROUGH THIRD QUARTER—P. 77
Unless demand drops sharply, which is not likely, steel mills will be booked solid though the third quarter. A few may have carryovers into the fourth. Second quarter carryovers have been as high as 5 weeks, and include cold-rolled sheet, hot-rolled bars, structurals and some plate. How books will be balanced.

HOW MUCH HAVE STEEL EXTRAS CLIMBED?—P. 79
Producers would rather not say what the average boost has been. Here's an item-by-item list of what the hikes mean for the more important steel products. Impact will not be the same for all buyers, depending on their individual requirements. And there will likely be a change in purchasing habits.

DEFENSE SPENDING WON'T DIP DESPITE CUTS—P. 83
Actual military spending in fiscal 1954 won't be less than in the current year—unless Congress goes in for further economizing. Expected total for next year is $43.2 billion against $43 billion in 1952. Congress is recommending the biggest cut for the Air Force but suggests the Army get more.

STEEL BOOM DEMAND STILL ROLLING ALONG—P. 157
There is still nothing to indicate that the boomtide of steel orders is starting to ebb. Price increases spreading through the industry are being accepted philosophically by consumers. It may come as a shock to forecasters to learn that some mills expect fourth quarter carryovers, despite efforts to get current.

ALUMINUM PRODUCERS SCORE NEW RECORDS—P. 160
Several production records fell before the aluminum industry's axe in March. Total for the month was 104,920 tons—topping the 100,000-ton mark for the first time in history. Quarterly total was 287,004 tons. But zinc people are taking mines out of production because of low prices. A strike shut three.

Leaders OF INDUSTRY THE WORLD OVER

*AMERICA:
Allegheny Ludlum Steel Co.
American Steel & Wire Co.
Armco Steel Corporation
Bethlehem Steel Company
Carnegie-Illinois Steel Corp.
Cleveland Wire Works (G.E.)
Consolidated Vultee Airc. Corp.
Continental Steel Company
Copperweld Steel Company
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Empire Steel Corporation
Follansbee Steel Company
Jones & Laughlin Steel Corp.
Hofmann Industries
Mercer Tube Company
Mesta Machine Company
National Tube Company
Niles Rolling Mill
Parkersburg Steel Company
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Sharon Steel Corporation
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Valley Manufacturing Company
Vilsack Fisher Mfg. Co.
Wheeling Steel Corporation
Wickwire-Spencer (C.F.&I.)
Youngstown Sheet & Tube Co.

*CANADA:
Dominion Foundries & Steel Co.

*ABROAD:
A.R.B.E.D. Co., Luxembourg
Beautor Cie., France
DeWendell Cie., France
Formeaux Cie., France
Messrs. Thomas Baldwin, Wales
South African I. & S. Co., S.A.
Steel Co. of Wales, Wales
Swindon Iron Works, England
Yawata Iron & Steel Co., Japan

*(List is incomplete and growing)

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SOAKING PITS, regenerative and one-way recuperative,
CONTINUOUS REHEATING FURNACES, Bloom, Billet and Slab,
DIRECT FIRED ANNEALING FURNACES for Sheet, Coil, Tool Steel Bars, Wire, other products
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And Other Complete Heating Lines

In America and abroad, F.E.I. is recognized for top performance. You can rely on Furnace Engineers' skill, based on over 30 years' experience, to provide the most advanced heating methods. F.E.I.'s patented, automatically controlled combustion system provides high metallurgical quality and faster, more economical operation. Remember F.E.I. is the complete buy . . . from plan to production.

Write for Bulletin

6

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Indexed in the Industrial Arts Index and the Engineering Index.

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Caught Again?

ONCE again the American people have been subjected to the inhuman double talk of the Communists. Once again our government has been taken in by the poisoned olive branch. Once again we are back where we started—except for the pitifully few sick and wounded war prisoners who were returned.

These men were used as a cruel and barbarous smoke screen to hide Red China's real intentions. The only reason the Reds would agree to a truce in Korea is to mask aggression elsewhere. But they didn't even wait for that. Laos was invaded and Thailand threatened.

Our pattern has been the same—a viewing with alarm and frantic token help after the invasion has progressed. Students of Asia see nothing but a change of direction in Red China's advances.

What about the "peace" offensive from Russia? Again it has duped millions of Americans. And strange to say, some of our government people were taken in by it. This is preposterous in view of the long list of betrayals of human decency and solemn pledges by Russia.

The national "letdown" in spirit in Washington and elsewhere discloses how much we want peace. But it is also a sign that we can be taken in again and again—just by a few "kind" words on the part of Russia. Each time we have this mesmerizing smoke blown in our eyes the Communists are making hay some place.

So far we are still using powder puffs in our dealings with Russia and Red China. We continue to pay too much attention to what Great Britain thinks or doesn't think. We have continued the kid glove, silk hat, rarefied diplomatic touch in our actions and talk.

We ought to remember: Oatis is still in a satellite prison; Russia is an aggressor though not officially named as such; there is no embargo on Red China; Manchuria remains sacred from attack by U.N. bombers; we have no clear-cut policy on how to end the Korean War on a decisive basis; Russian military production daily outstrips ours; and the Communists are on the march in Asia.

We always run the danger of drifting into a hopeless frame of mind. We need something far better than that if we are to survive Communist aggression. Time is their ally; bungling their little helper.

Tom Campbell

Editor

Fatigue Cracks

by William M. Coffey

Monologue

Went to bed last March 1st, it was raining. Got up this morning, raining. Been raining all that time. Weather Forecast, Block Island to Sandy Hook—rain. Kano to Pogo—rain. North Pole to South Pole—rain. Eagle Pass, Montana—rain. Sun, oh sun, wherefore et vous, oh sun? (King Leer, Ibid.). We're trying to say we're just not braced for it today. We're rolling back to sleep until it clears and today on Fatigue Cracks will be Contributor's Day, except for one small "must" business item of our own. It's a message to a subscriber: *"If you don't pay up what you owe on your* IRON AGE *subscription, we'll tell all your other creditors you have."*

First Contribution

. . . comes from Managing Editor George Sullivan, whose French is atrocious, veree mal:

"Not so long ago we ran an article about how American machine tools were smuggled behind the Iron Curtain without the knowledge of their makers. We never really knew the details, however, until we saw how it was done, step by step, on a television program last week.

The thing was complete even to a dame *(note to Mr. Sullivan: how come you won't let us call a twist "a dame")* in a low cut gown *(same question)* who appeared to speak only German, but turned out to be an American newspaper twist *(that's better)* who paid the hero's fare from Vienna (or "Wien" as we used to say) to Hamburg—and if anyone on this paper goes loading up the expense account that way he'll hear from le management promptment.

Climax comes when the hero (an American engineer sent over to install the lathes) finds out that they are destined for an Iron Curtain country. He has only a few minutes to save the day. How does he do it? Easy. He finds an axe and smashes the crates—the whole lot of them, three carloads of precision lathes. Smashes them into crazy shambles with his own little axe. And all in three minutes, too.

Morale—the lathes we carry in the National Metalworking Weekly are made of sterner stuff than that." *And stay away from dames.*

Second Contribution

. . . comes from Mr. F. C. Rodgers of The Cardox Corp. who continues with his Engineering Office Vocabulary:

"Clarification"—To fill in the background with so many details that the foreground goes underground.

"We are making a survey"—We need more time to think of an answer.

Puzzlers

Some more wine glass winners: Mary Lou Perrott, R. W. Payne and F. B. Kopicki. Some more snow plow winners: Mary Lou Perrott, Bill Farley 3rd, Albert A. Alles and George Wald.

New Puzzle

Five men are engaged in a Poker game—Brown, Perkins, Turner, Jones and Riley. Their brand of cigarettes are Luckies, Camels, Old Golds, Kools and Chesterfields, but not necessarily respectively. At the beginning of the game the number of cigarettes possessed by each of the players was 20, 15, 8, 6 and 3, but not necessarily respectively. Later in the evening at a given time, when no one was smoking, the following happened:

(1) Perkins asked for three cards.

(2) Riley has smoked half of his original supply; or one less than Turner had smoked.

(3) The Chesterfield man originally had as many more, plus half as many more, plus 2½ more cigarettes than he has now.

(4) The man who smokes Luckies has smoked two more than anyone else, including Perkins.

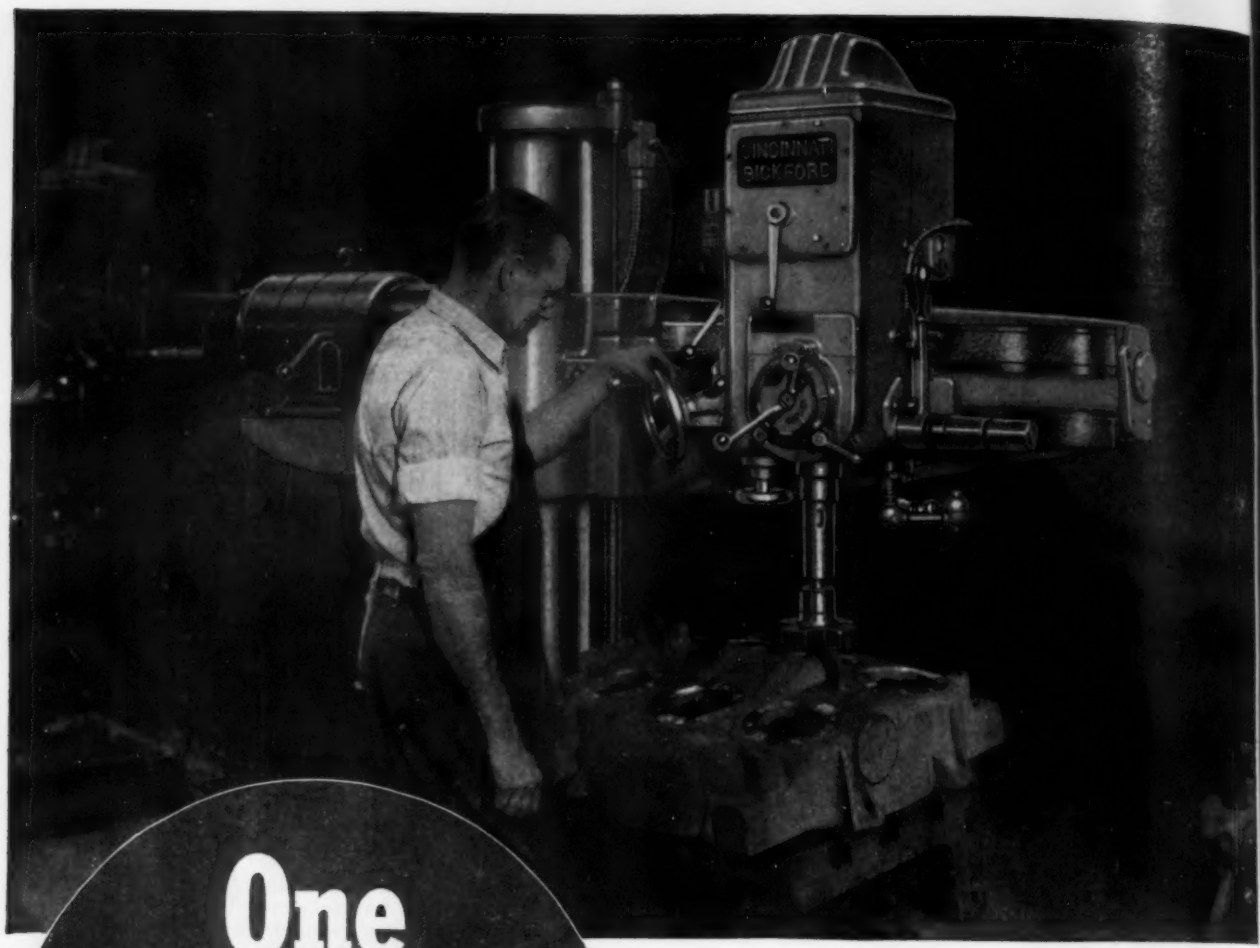
(5) The man who draws to an inside straight, absent-mindedly lit the tipped end of his fifth cigarette, the last he smoked.

(6) Brown drew as many aces as he originally had cigarettes.

(7) The Camel man asked Jones to pass Brown's matches.

(8) No one has smoked all his cigarettes.

How many, and of what brand did each man have when he began? Many thanks for this one to Carl Souza of the Rheem Manufacturing Company's Puzzle Club.



One set-up saves 30%

Photos courtesy of the Kelman Electric & Mfg. Company, Los Angeles, California.

Boring, facing, and high speed drilling with one set-up cut the floor to floor time about one-third on this job.

The Kelman Electric & Mfg. Company say their Cincinnati Super Service Radial Drill "handles easily, is very accurate and versatile."

They are facing 6" diameters; drilling for ½" bottom tap, and tapping with a ½" bottom tap on this job.

The part being processed is a Bronze Top Casting.

Cincinnati Super Service Radial Drills are profit makers in this shop, and they could be in yours.

Write for Bulletin R-21C

CINCINNATI BICKFORD

RADIAL AND UPRIGHT DRILLING MACHINES

THE CINCINNATI BICKFORD TOOL CO.

Cincinnati 9, Ohio, U.S.A.

Dates to Remember

Meetings

May

THE NATIONAL ASSN. OF SHEET METAL DISTRIBUTORS—Spring meeting, May 14-15, Deshler-Wallick Hotel, Columbus, Ohio. Association headquarters are at 1900 Arch St., Philadelphia.

ASSN. OF IRON & STEEL ENGINEERS—Annual spring conference, May 18-19, Statler Hotel, Buffalo. Association headquarters are at 1010 Empire Bldg., Pittsburgh.

METAL TREATING INSTITUTE—Annual spring meeting, May 18-20, Shamrock Hotel, Houston, Tex. Institute headquarters are at 271 North Ave., New Rochelle, N. Y.

EXPOSITIONS

MATERIALS HANDLING SHOW—May 18-22, Philadelphia.

NATIONAL METAL SHOW—Oct. 19-23, Cleveland.

INDUSTRIAL FURNACE MANUFACTURERS ASSN., INC.—Annual meeting, May 18-20, The Homestead, Hot Springs, Va. Association headquarters are at 412 Fifth St., N.W., Washington.

SOCIETY FOR EXPERIMENTAL STRESS ANALYSIS—Spring meeting, May 20-22, Hotel Schroeder, Milwaukee. Society headquarters are at Central Square Station, Cambridge.

GAS APPLIANCE MANUFACTURERS ASSN.—Annual meeting, May 20-22, The Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at 60 E. 42nd St., New York.

AMERICAN STEEL WAREHOUSE ASSN., INC.—Annual meeting, May 24-26, The Shoreham, Washington. Association headquarters are at 442 Terminal Tower, Cleveland.

ALUMINUM WARES ASSN.—Annual meeting, May 24-27, The Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at 1506 First National Bank Bldg., Pittsburgh.

COPPER & BRASS RESEARCH ASSN.—Annual meeting, May 24-27, The Homestead, Hot Springs, Va. Association headquarters are at 420 Lexington Ave., New York.

NATIONAL INDUSTRIAL SERVICE ASSN.—Convention, May 24-28, Statler Hotel, New York. Association headquarters are at 303 Lexington Ave., New York.

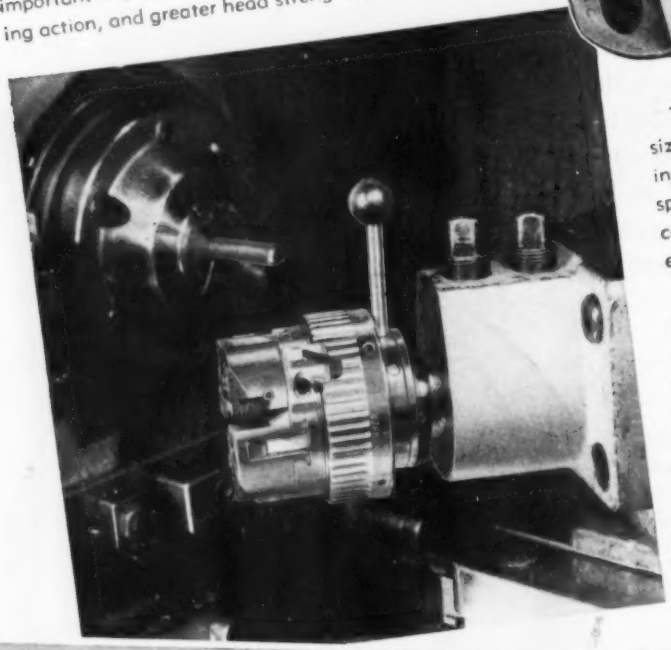
SCIENTIFIC APPARATUS MAKERS ASSN.—Annual meeting, May 24-28, The Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at 20 N. Wacker Drive, Chicago.

HYDRAULIC INSTITUTE—Spring meeting, May 25-27, Seaview Country Club, Absecon, N. J. Institute headquarters are at 122 E. 42nd St., New York.

The IMPROVED 5/8" LANDMATIC Head

- **POSITIVE LOCKING ACTION**
- **MORE RIGID CONSTRUCTION**

An improved **LANDMATIC** Hardened and Ground threading head has been designed for use on turret lathes, hand-operated screw machines, and automatic screw machines employing a stationary head. The 5HH **LANDMATIC** is a stationary self-opening head, and will produce threads ranging from ¼" to ⅝" in diameter. Its construction features two important improvements in design—a positive locking action, and greater head strength.



The positive locking action is provided by a new size-adjustment mechanism. A pivoted latch is held in engagement with notches on the adjustment ring by spring tension. A movement of one notch makes a corresponding adjustment of .001" on the pitch diameter of the workpiece.

The greater overall strength of this die head results from the increased thickness of the head body and its various parts. The new design allows this small die head to easily withstand the extreme stresses imposed when threading special alloy steels.

The 5HH **LANDMATIC** Head has a notably small number of working parts. All parts are made of special alloy steel, and are hardened and precision ground. Left-hand threads may be cut by using left-hand chaser holders and regrinding the same set of chasers. More information available on request.

50th ANNIVERSARY

The LANDIS *Machine* COMPANY

THE WORLD'S LARGEST MANUFACTURERS OF THREAD GENERATING EQUIPMENT

WAYNESBORO · PENNSYLVANIA · U. S. A.

the Iron Age
FOUNDED 1855

THE IRON AGE Newsfront

A STEEL STRIKE IS STILL A POSSIBILITY that should not be ruled out. United Steelworkers has embarked on a "conditioning" campaign to offset anti-strike attitude of workers hard hit by last year's walkout. This campaign will be intensified or diminished depending on developments in the current wage drive.

COMPETITION BY GM AND FORD TO OBTAIN TOOLS for new engines has put new high pressures on Detroit machine tool builders. With defense lagging, the auto industry faces a terrific engineering and tooling race.

A NEWLY DEVELOPED MECHANICAL-CHEMICAL FILTER promises to revise current practices in boiler feed water treatment. It eliminates algae, scums, minerals and bacteria in water without use of silver compounds and it has residual purifying effects on treated water.

RADIO INTERFERENCE caused by antifriction bearings in rotating equipment can be cut by use of a low-viscosity oil or grease, the Navy has found. Insulating sleeves, bushings or shafts with a non-conducting material further cuts interference.

HOME HEATING INDUSTRY IS WATCHING CLOSELY installations of home air conditioning units integrated with air duct heating systems. Big question is whether trend toward radiant and hot water systems will be reversed. One large company, pending results of spot market installations, may make a strong bid with an all weather heat pump.

A TINY ROTARY HEAT ENGINE invented by a U. S. Navy officer may soon supply a cheap, smoothly-operated source of power for clocks and advertising displays. Atmospheric energy and small temperature differences between component parts are used.

FIRST ROLLING MILL BUILT SPECIFICALLY FOR ROLLING URANIUM has been placed in operation by the Atomic Energy Commission. The unit, of special design, produces bar sizes.

BARRING LABOR TROUBLES OR UNFORESEEN OBSTACLES, the auto industry is gunning for record second quarter production of 1.9 million cars. Almost certain to fall is the first half record of 3.1 million cars set in 1950 and tied in 1951. One third of the nation's auto plants are now on second shift operations.

A GIANT CAP SCREW MACHINE being built for a Midwest plant may revolutionize heading up of cap screws. Scheduled for operation by mid-summer, the machine will be able to chew up three carloads of steel per day. The 50-ft long machine will turn out cap screws to 1¼ in. in diam and to 10 in. in length.

CLARIFICATION OF TITANIUM TERMINOLOGY has been made by the Advisory Committee on Titanium. What has been called commercially pure titanium will henceforth be specified "titanium." "Titanium alloy" will be used to cover all other grades.

...and Another 110 Tons of Ore are Ready for Stocking

At a large Western Pennsylvania steel mill this Heyl & Patterson Traveling Car Dumper has been efficiently unloading iron ore for the past 10 years.

With the ease of a champion this giant machine raises and empties 110-ton-capacity railroad cars at the rate of 30 per hour.

Designed, fabricated and erected by Heyl & Patterson, this installation reflects the ability of H & P to do the "whole job" from beginning to end . . . from original design to successful operation.

When your problem is concerned with the handling or transportation of ore, coal, slag, limestone or other bulk materials . . . call on Heyl & Patterson, specialists in the design, fabrication and erection of Heavy Bulk Materials Handling Equipment since 1887.

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Heavy Bulk Materials Handling Equipment

All The Way from Design to Erection

ALMOST HALF of all cars assembled in California are produced in this "Little Detroit" south of Los Angeles. Lincoln-Mercury is in foreground, Chrysler center, and Willys upper right. Total Western auto output in 1952 was 508,658 cars and trucks. Goal in 1953 is 625,000 vehicles.

the Iron Age
FOUNDED 1855
News Section

AUTOS: West Expanding to Fill Orders

California assembly lines turn out 12 pct of U. S. auto production, expanding to meet demand . . . Most parts shipped from Detroit . . . Suppliers expand too—By *T. M. Rohan.*

Today's Californians would be as lost without automobiles as their grandfathers were without horses. And with one car for every two persons, highest U. S. average, they aren't much troubled by corns.

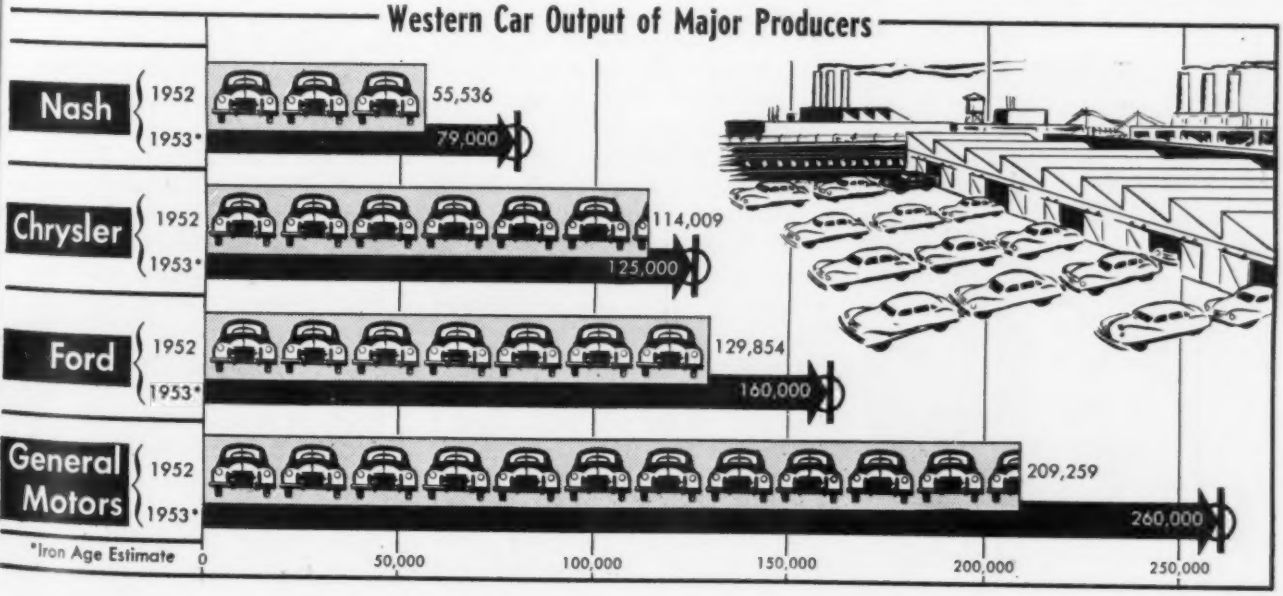
California auto assembly plants rank second only to Detroit in output, have a hard time keeping up with demand. Last year they turned out 508,658 cars—about 12 pct of the nation's total. In 1953 they are shooting for a total of 625,000.

General Motors, with four California plants, hopes to boost output 24 pct; Ford, with three plants, is aiming at 23 pct; Chrysler for 10 pct more in two plants. Independents like Nash at El Segundo, Studebaker at Vernon and Willys at Maywood are also gearing for higher production.

All told, 14 makes of cars are assembled in California: Ford, Lincoln, Mercury, Buick, Pontiac, Oldsmobile, Chevrolet, Chrysler, De Soto, Dodge, Plymouth, Nash, Studebaker and Willys. Only major exceptions are Hudson, Packard, which has no branch plants, and Cadillac, which nevertheless has its hottest sales market in California.

Kaiser stopped using its plants at Long Beach, Calif., and Portland, Ore., 2 years ago, but may now use the Willys Los Angeles plant for assembly.

Chrysler more than doubled California assembly operations in 1952, expects expansion to continue. The Los Angeles plant turned out 50,544 cars last year and



BUFFING HOODS for new Chrysler-built cars at the Los Angeles plant. Bodies are shipped in from Detroit.

FENDER is smoothed for bonderizing and painting at Chrysler-Los Angeles, which turns out 50 cars per hour.

CONVEYOR BELT moves bonderized Chrysler fenders to spray booth for painting as one step in West Coast assembly.

added a Douglas Globemaster subassembly line.

At its other plant in San Leandro, Chrysler is starting assembly of body components for the first time. Assembled bodies used to come from Detroit for joining with chassis and finishing. Now stampings will be shipped flat and additional small parts locally procured, a considerable freight saving. New operation will employ 1100 on two shifts.

Facilities are being strained to keep up with consistently increasing western demand. Ford has its Richmond and Long Beach Ford plants and Los Angeles Lincoln-Mercury plant on 9-hour days, plus two Saturdays per month. Richmond and Long Beach are at top output with 30 and 40 vehicles per hour respectively.

Lincoln-Mercury sales are nationally up 61 pct over 1952 and Ford about 40 pct. All Ford plants, including the one at Dallas, are on two shifts except the Los Angeles plant. Extra output was most needed there, but enough skilled workers just weren't available.

Need Higher Volume

Ford is now engineering a new $50-million assembly plant at Milpitas, Calif., will start production in early 1955. The town, about 45 miles south of San Francisco, is located on both the Western and Southern Pacific R.R. tracks, 20 miles from the deepwater port of Redwood City, with excellent gas and electric connections.

Auto production in the West keeps climbing, but the steel industry is largely left behind. Nationally, auto firms use 22 pct of steel output; in the West less than 1 pct. In spite of impressive output figures, there still isn't enough volume to justify mass production lines in this highly competitive market.

Vast majority of auto parts are stamped in Detroit and shipped either flat or partially assembled to the West. Major western contributor is Norris-Thermador at Los Angeles. Now making about 200,000 wheels per month, it will boost output to 300,000 by July.

Every car uses five identical wheels, sufficient volume to offset die costs. But body panels, for example, are different for each model and would make die costs excessive.

Norris-Thermador recently studied the possibility of mass producing mufflers. It found that a production line efficient enough to be competitive would turn out a full month's supply for all western made cars in a week. In an industry where a difference in the fourth number behind a decimal means winning or losing an order, the whole project was not economically feasible.

Expand Branch Plants

As production mounts, eastern auto parts suppliers are either building or enlarging existing western facilities. American Brake Shoe, for example, last year put in a forging plant at Azusa, is now turning out a considerable volume of automotive forgings. And its San Francisco foundry is being expanded, largely on strength of increased automotive and aircraft parts potential.

Various firms have recently made comprehensive analyses on manufacture of auto frames on the West Coast. Early indications were that about $9 per frame could be saved if orders for at least 1000 frames monthly could be booked.

Things to Come

The West Coast not only eats up American cars as fast as they come off the assembly lines, but provides a prime market for foreign cars as well. High per capital income and low water freight combine to move a lot of European models.

California's famous climate and equally famed zest of its citizenry have brought a rage for sports cars of all types. The area is often mentioned as a logical site for sportster manufacture.

California auto assembly is still in high gear, but suppliers are waiting for the day when they can really make cars, not just slap them together.

STEEL: Strong Union Looks Tough

USW won't take "no" for answer on wage talks . . . McDonald will issue strike call if necessary . . . But odds are against it . . . Claim long 1952 strike paid off—By *J. B. Delaney*.

Before you try to guess the outcome of steel wage negotiations which got underway this week consider these two background factors fully:

(1) The United Steel Workers of America (CIO) under its new leader, David J. McDonald, still adheres to basic union principles. It is no weaker, and may be stronger.

(2) If backed into a corner, the union will resort to its most potent economic weapon—the strike. Sentiment of union rank-and-file is considered when question of a strike arises, but is not necessarily obeyed.

Runs in the Family

Mr. McDonald has spent most of his adult life in organized labor. In the 30 years he spent with the late Philip Murray, Mr. McDonald absorbed much of the former USW chief's thinking and philosophy.

Mr. McDonald may not have the flair and "color" of Mr. Murray but he is potentially as capable in achieving union aims. He is inclined to lean more heavily on others in the union hierarchy in mapping out his program. In some respects, he is more conservative in reflecting the thinking of his membership.

At 50, Mr. McDonald can look back on being brought up in a community overshadowed by mills of Jones & Laughlin Steel Corp. His father was a member of the old Knights of Labor and was "invited" to leave Springfield, Ill., during a strike. The elder McDonald later worked in Pittsburgh mills and was a local union officer of the Amalgamated Assn. of Iron, Steel & Tin Workers.

He's No Pushover

Mr. McDonald has dabbled in dramatics, has a certificate of graduation from Carnegie Tech's drama school. At 21, he became Philip Murray's personal secretary when the latter was vice-president of the United Mine Workers. He became

BEFORE YOU START guessing trends of steel labor negotiations, know the background of USW leader David J. McDonald. If he must he will pull a strike—even against no-strike sentiment. He may get a settlement of about 10¢ per hr for his union.

secretary of the Steel Workers' Organizing Committee, predecessor of the USW, when Mr. Murray was chairman. Mr. McDonald has been with the steel union since. He is married and father of a son, David, Jr.

There is no reason to believe that McDonald will be any easier to deal with than Philip Murray was. He resents speculation that he will be a "pushover" in his first set-to with the steel industry as union president.

Mr. McDonald has not said how much of a pay increase he wants, but it's believed his asking price will be 15¢ an hr. He is not likely to get it. The industry's first answer may be a flat "no". Then the real bargaining will begin. The industry is perhaps in its best bargaining position in years. It can point to many reasons, economic and otherwise, why the workers should not get a raise.

The union will not take "no" for an answer. After the give-and-take is over, the settlement probably will be in the neighborhood of a dime. Some guesses range from 8¢ to 12¢ an hr.

The odds are against a strike. Neither the union nor the industry wants one. Emphasis is placed on strike-weariness and the economic blow suffered by the steelworkers during last year's walkout.

Top union thinking could override no-strike sentiments of members if the need for a walkout was viewed as imperative. Some steel strikes in the past have been carried out to successful conclusions in an atmosphere of actual and suspected rank-and-file disapproval.

The union, through its newspaper, *Steel Labor*, has already begun a campaign to take the edge off anti-strike sentiment. Its latest issue carries a front-page story headed, "The 1952 Strike . . . It Paid Dividends."

How It "Paid"

The "*Steel Labor*" article argues that wages "lost" during the strike total $597.44; less vacation pay of $149 and $83.20 won as retroactive pay brings average maximum temporary "loss", according to the union, to $364.88. The article points out that average weekly pay increase under the contract ending the strike is $10.88. On this basis, increased pay from end of strike to Mar. 31, 1953, totals $380.80, slightly more than the pay lost during the strike, according to the union's figures.

Every year in the future, says the article, on the basis of current hours worked, steelworkers will earn $565.76 more than they did before the strike.

POW's Retain Job Rights

A Korean or other war prisoner still retains his re-employment rights, even though his detention may have caused his total service to exceed the 4-year limitation in the Universal Military Training & Service Act, the government has ruled.

TOOLS: Vance Plan Adoption Nears

Plan to stockpile war production potential rather than actual weapons sure to be adopted in modified version . . . Agreement's almost complete . . . Funds cut—By *R. M. Lorz.*

Despite rumors of Defense Dept. opposition, a modified version of the Vance Plan for military preparedness seems almost certain to be adopted.

Washington sources say agreement on a program of "live" storage of productive capacity is almost complete. They believe opposition to the plan has been greatly exaggerated in some quarters.

Actually general agreement on establishing a broad base for military products starts on the top rung of the Washington ladder. President Eisenhower indicated as much recently when he told newsmen he didn't see how the Vance Plan could be scrapped.

Areas of Agreement

Machine tool builders while admitting there have been points of difference on how concentrated the program should be nevertheless emphasize specific areas where agreement has been the rule.

Although Defense Dept. Chief Charles Wilson reportedly favors setting up standby equipment in fewer plants he is and has been behind the philosophy of the Vance Plan ever since he took office.

Industrialists weary of struggling with recurring crisis demands for greatly increased production wholeheartedly support this preparedness planning. One executive says the plan offers the only sensible antidote for technical changes, changes in end item requirements, obsolescence, depreciation, etc.

If it is adopted most industrialists believe the government will be able to gear the nation for maximum preparedness with about 10 pct of the funds needed to maintain a costly stockpile of weapons.

The Vance Committee believes Washington should invest an estimated $2 billion to bring its ownership of production equipment up to about 550,000 items. At present U. S. tax payers own about $4 billion to $5 billion worth of equipment. (About one-fourth of the estimated replacement value of private holdings is now pegged at from $20 billion to $25 billion.)

Rate of Spending

Spending under the plan would be spread over the next several years at a rate of from $200 million to $500 million annually. Annual replacement costs have been estimated at around $300 million.

The Truman Administration had asked for $500 million to get the program under way this year but some downward Congressional revision seems likely in view of the air of economy in Washington. Although the Administration will not prune this item, some capital sources are guessing the final grant from Congress will fall between $200 million and $225 million.

So far there has been no legislation introduced to implement the program but it should come before June 30th. When funds are finally appropriated long lead "elephant" tools will probably be the first items to be considered. Need for these jumbo tools has been urgent for some time as the Navy's marine diesel propulsion program lags. In discussing the hold-up in long lead items builders place the blame on the lack of a definite planning program in Washington. Now that a more orderly approach is emerging they have no doubts about being able to supply the necessary tools.

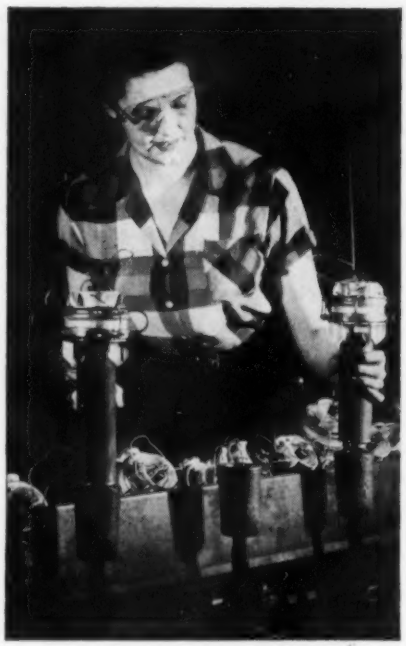
In essence the Vance plan is built around stockpiling of production equipment rather than end items. The plan not only applies to machine tools but also to metal forming and some other types of production equipment.

Fill Current War Needs

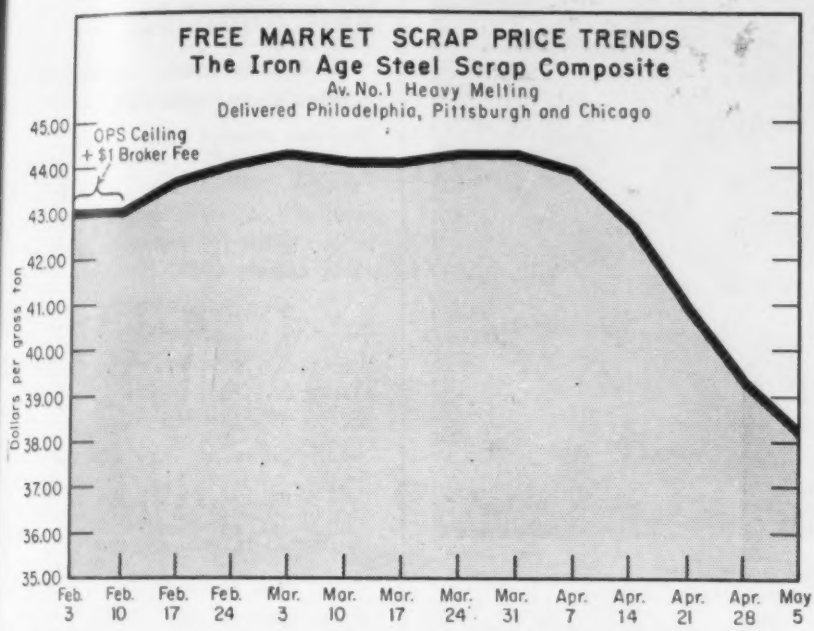
As originally conceived the program calls for establishment of standby pilot plants maintained and operated on a limited basis under contracts awarded to private industry. Vance Plan proponents explain that potential productive strength could be held ready while pilot plants operated on a limited basis to supply current military needs. Then in case of any emergency full production could be achieved with less time lag and increased efficiency.

Currently the pilot plant blueprints are still on the shelf until exhaustive studies of phased mobilization have been completed. (See p. 99.)

Producers say increased control of military procurement by civilian government heads will go a long way toward eliminating the kind of thinking which leads to heavy stockpiling of weapons. (See p. 93.) As one producer put it, "We will be miles ahead in dollars and time if we can convince the military that standby machines and production equipment are actually more potent."



ROCKETS FOR KOREA are being made at a rate of 200,000 per month at Christy Park Works of National Tube Div., U. S. Steel Corp.



SCRAP: Shortage Now—Is in Demand

The old scrap cycle's been dislocated . . . Spring demand is slow as mills seek to reduce inventory . . . Prices on all grades on downtrend . . . How stocks, prices went—By *T. Metaxas.*

Again there is a shortage in scrap iron and steel—the oddest one in years. This time the scarcity is not supply but of demand. Easing of the buying rate has been accompanied by a price decline in both secondary and quality steelmaking grades.

Formerly scrap hibernated through winter, was roused in the spring. Steel mills surveyed stockpiles that had been flattened by winter steelmaking when much of the scrap supply was ice-locked. The mills would then normally add heft to their scrap inventories to prepare for the winter ahead.

Cycle Has Changed

That the cycle has been tampered with is shown by the mills' current desire to reduce inventory. Scrap stockpiles remain topheavy and have been so even in the dead of the past winter. Where there should be buying enthusiasm today, there is buying apathy.

Mill inspection of scrap carloads is hawk-eyed, and dealers are on their mettle to avoid rejection and downgrading. Meanwhile, steel furnaces pour record melts.

The price of no other industrial raw material has declined as sheerly as scrap. Protected by still heavy inventories, and with the scrap collection season poised to start in earnest, mills see no urgency to buy.

Market softness started months ago as a sag in secondary grades but has now crept into quality steelmaking scrap. Top grades continued popular until recently because mills sought quality to sweeten the scrap charge which had been suffering because of too much secondary scrap in stockpile.

Source of trouble can be traced to last summer's steel strike when scrap was dammed up and then flooded out. Stockpiles reared upward and remained that way because scrap sources had been disciplined to yield metallics through winter due to the shortage in 1951.

In August 1952, consumer stockpiles stood at 6,274,000 gross tons, while in January 1953, they were just 6 million tons, a negligible reduction. For March estimated inventory held to about 5.9 million tons, further sapping mills' initiative to buy. From August, 1952, to March, 1953, pig iron inventory increased from 1,607,633 tons to 1,691,000 tons.

There are positive indications that mills are using heavier pig iron charges in openhearths, pushing aside some scrap.

While prices of No. 1 heavy melting steel and No. 1 bundles have been retreating, the drop in No. 2 grades and blast furnace turnings has been a rout. From its highest peak after price decontrol in February, THE IRON AGE No. 1 heavy scrap composite has eased about $6 to date.

On Feb. 17, No. 2 heavy melting steel sold delivered to Pittsburgh at $43.50 per ton—but the price on May 5 had fallen to $35.50. More drastically reduced were No. 2 bundles which sank from $43.50 to $33.50. In the same period, Chicago prices on No. 2 steel and No. 2 bundles at $39.20 tumbled to $27.50 for No. 2 steel and $24.50 for bundles. All other scrap centers have witnessed similar declines.

Magnet Won't Work

From mill buyers have come persistent complaints about the quality of No. 2 bundles in certain scrap areas. One buyer told IRON AGE about a carload of bundles that could not be picked up by a crane magnet. Another buyer insisted he was willing to pay good money for good bundles but would downgrade without compunction if specifications went unheeded.

After investing many millions of dollars in mechanization and expansion to meet larger demands of the expanded steel industry, many scrap people are worried about the present scrap slow-up. They say large tonnages must sit where they are. When buying accelerates, as it must, these pent-up supplies will keep the market soft for some time. Yet many scrap traders are more worried about a deficit in demand than about the skid of prices.

—Stockpiling—

Warehouses:

GSA asks funds to pull stockpiles under one roof by '55.

Plans have been made by General Services Administration to pull all strategic stockpile materials together under government-owned roofs during 1955.

It all hinges, however, on whether Congress appropriates an additional $28 million which GSA is asking for the purpose of rounding out its storage construction.

Enough money has already been appropriated to permit construction of nearly 7.5 million sq ft of additional warehouse space.

Not Enough Space?

But the trouble is, according to GSA officials, something like 600,000 tons of delivered stockpile materials are now lying in commercial warehouses—taking up about 6 million sq ft.

Not only does this practically wipe out all the new space now authorized, officials say, but a lot of additional materials will be delivered over the next 18 months.

Best current estimates by GSA are that another $28 million would do the trick—allow construction of an additional 4.5 million sq ft of warehousing space and 350,000 bbl of extra tankage.

Save 90 Pct

Average cost of commercial space for stockpile items is close to $10.50 a year per ton—or about $1 per square foot.

On the other hand, GSA says, the same materials could be stored in government-owned, GSA-operated warehouses for about $1 per ton or 10¢ per sq ft and the cost amortized in 7 years.

Total storage requirements for stockpiling materials under the present program—about $9 billion of which $4.1 billion worth is on hand—is estimated at about 25 million sq ft for dry storage and about 2.2 million bbl of tankage.

If the GSA program is approved, the agency would provide 16.5 million sq ft of dry space.

STEEL: Still a Seller's Market

Mills booked solid through third quarter, may have carryovers into fourth period . . . Cut quarterly allotments by 1 month . . . But demand dip still possible—*By K. W. Bennett.*

Purchasing agents may be in for a dry summer, steelwise at least. Crystal ballers have been predicting a dip in steel demand in third or fourth quarter. But steelmakers now realize they will be booked solid throughout third quarter unless demand drops sharply. A few may have carryovers into the fourth.

Second quarter carryovers have been as high as 5 weeks, include cold-rolled sheet, hot-rolled bar, structurals and some plate. More than one sales chief fears grief as far in the future as early fourth quarter. Ominous outlook could apply to sheets, hot-rolled bars, plate and structurals.

Cut Quotas 1 Month

Any shortage will be in spite of spartan efforts by mills to bring their books current by third quarter. Usual method is to slash customers' quarterly allotments by 1 month.

This is done in either of two ways: (1) Wipe out 1 month's carryover from second to third quarter or (2) deliver the carryover in third quarter and cut that period's allotment by 1 month.

July Bears Brunt

In neither case is the amount of steel actually rolled by the mill reduced, nor is the amount received by the customer each month hurt. Over-booking is wiped out.

This system allows a mill 30 days behind schedule to become current any time it wants during third quarter. July seems to be the month in which most adjustments will be made.

At least one small mill has adopted another method. It will drop no bookings, but will trim consumer allotments for third quarter. One customer would receive 500 tons of a normal 2500 tons. Another small mill reports a sample cut: A customer booking 1000 tons would get 400. This is not so bad as it looks. Customers may have been already booking more than they were receiving.

A major mill was 2 months behind in deliveries early this year. It will have to cut 1 month off the carryover by the end of second quarter by smashing previous production records, will drop 1 month's bookings to wipe out the remaining 30-day carryover.

Another major producer, currently 4 weeks behind on cold-rolled sheet, can be expected to slip to 5-6 weeks behind by end of second quarter. This mill will also drop 1 month's bookings, but will still have 2 weeks of cold-rolled sheet carryover unaccounted for. Another item should be running about 7 weeks behind at that time.

New rolling mills had been expected to relieve demand pressure somewhat. But nearly all have been late getting into operation. Increases in shell and cartridge case steel production of 18-30 pct have further reduced available annealing and soaking pit space.

Steel men aren't saying that demand couldn't shift or slow suddenly. A fall-off in automotive buying has been predicted for later in '53. Appliance market looks weaker, and farm equipment has been cutting back for several months.

Cancellations in conversion tonnage (currently going great guns in the automotive field) could help, and have been confidently expected for some time. They have not materialized.

On the basis of current bookings and conversion deals, steel continues hard to get.

Regional Shortage of Foundry Iron

Foundry iron is tight in the Northeast—contrary to general softness elsewhere. Short supply rather than high demand is the reason.

Here's what happened: Bethlehem's merchant furnace at Steelton was down for practically 2 months as was the Mystic furnace at Everett, Mass. Labor trouble at Globe Iron Co. and Jackson Iron & Steel Co., both in Ohio, necessitated Hanna Furnace Co.'s switching a furnace to meet silvery iron demand.

Result is that Alan Wood has been largely carrying the ball and stocks there are practically to the ground. To help alleviate the local shortage, iron has been brought in from the Ohio Valley, Texas and foreign sources.

Fabricated Structural Steel

Contracts, Shipments, Backlog

Estimated Total Industry Tonnage

	1953	1952	Avg. 1947-1950
CONTRACTS CLOSED			
January	266,944*	213,110	161,976
February	180,882*	230,832	152,186
March	258,482	226,394	221,387
Total	706,308	670,336	535,549
SHIPMENTS			
January	241,392*	244,947	166,910
February	251,137*	246,398	161,170
March	266,337	268,840	191,297
Total	758,866	760,185	519,377
BACKLOG	2,155,047	2,500,946	1,199,049

*Revised

Source: American Institute of Steel Construction

Plastic Pipe Finds New Users

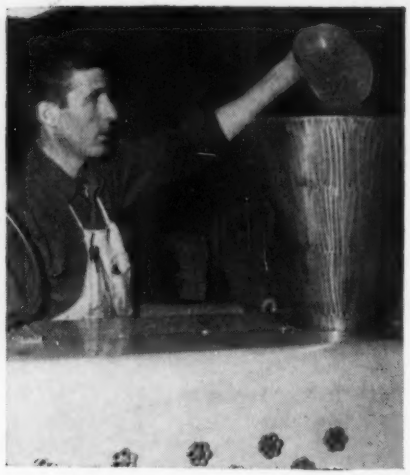
Use of plastics in place of steel pipe continues to grow. There are three general types of plastic pipe currently popular: Butyrates, polyvinyl chloride and polyethylene.

Eastman Chemical Products, Inc., Kingsport, Tenn., reports its Tenite butyrate plastic pipe was recently used in a 5000 ft water main installation at Haubstadt, Ind., instead of conventional metal pipe.

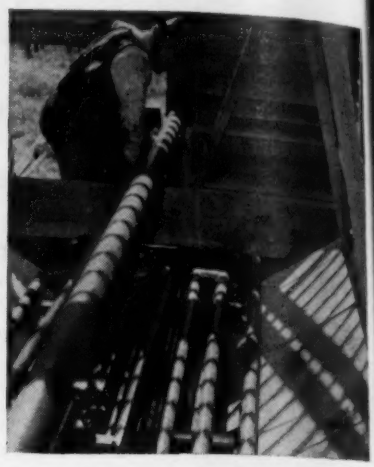
Advantages claimed for this type of plastic pipe are its resistance to corrosion and electrolytic action, speed with which joints can be made with solvent cement and slip-sleeve couplings.

In addition, since Tenite plastic pipe is only semi-rigid it can be laid in a curved ditch without use of angle couplings.

Kraloy Plastic Pipe Co., Los Angeles, states that it has developed a new rigid polyvinyl chloride plastic pipe which can handle corrosive chemicals at 500 psi working pressure. Resistance of Kraloy D-500 is said to be due to the fact that it contains no plasticizers, fillers, extenders, modifiers or hardening agents.



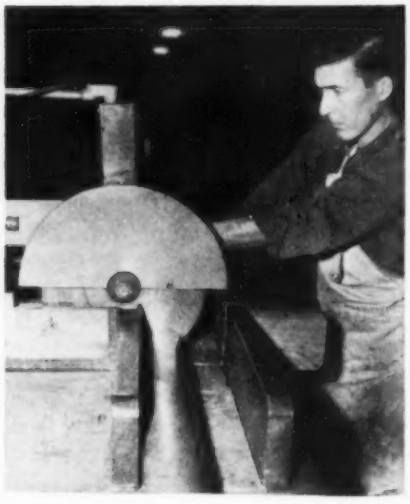
POLYVINYL chloride compound used in Kraloy D-500 plastic pipe enters extrusion unit which forms the pipe.



KRALOY D-500 was recently used in an oil field near Los Angeles as a cooling system for a waste water line.

AFTER leaving the extrusion machine, the Kraloy D-500 high pressure plastic pipe is passed through a cooling tank. Below, pipe is cut in 20 ft sections.

STRAPS hold pipe sections together until solvent cement forms joining bond.



FLEXIBILITY of Tenite plastic pipe enables it to conform to curved ditch.

Carbon Steel Bar Extra Price Changes

Amount of recent increase or decrease in selected extra charges of major bar producers

Dollars Per Net Ton

SIZE		QUANTITY		SPECIFICATION & TOLERANCE		MISCELLANEOUS	
Rounds, Squares Round Cornered Squares, Hexagons	$ 3 to $ 6	3 to 5 tons	$ 1.00	Special Bar Quality	$2.00	Normalize or Stress Relieve	$ 4.00 to $ 8.00
Ovals	2 to 7	2 to 3 tons	5.00	Add'l Restrictive Requirements	2.00	Annealing	−1.00 to +3.00
Angles	5 to 11	1 to 2 tons	10.00	File Steel Quality	2.00	Spheroidize Anneal	−2.00 to +6.00
Channels	10 to 24	Under 1 ton	10.00	Close Tolerance	1.00	Quench & Draw	6.00
Tees	10 to 16	Over 5 tons	Unchanged	Special Straightness	1.00	Pickling	1.00 to 6.00
Flats	4 to 6			Inspection	1.00	Burlapping Ends	5.00
						Blocking in Car (minimum per car)	10.00
						Boxcar Loading	1.00

EXTRAS: How Much They've Gone Up

Here's an item-by-item list of recent boosts in steel extra charges . . . Impact of hikes will not be the same for all consumers, depending on requirements—By J. B. Delaney.

How much more is the steel buyer going to pay as a result of price extra revisions by steel producers?

An analysis of the changes as they affect more important products gives at least a partial answer. The problem is primarily an individual one for consumers, and the impact will vary depending on requirements.

Changes reflect higher costs of integrated steel producers for materials and labor involved in performing extra operations or meeting special requirements of customers. In many cases, the revisions were made to correct inequities.

Here's the lineup:

HR Carbon Bars

Size extras—rounds, squares, and round cornered squares, smaller diameters (⅜ in. to 1 31/32 in.), up $6 per ton; larger diameters (2 5/16 in. to 8 in.), up $3 per ton. Hexagons, up $3 to $6 in small and large diameters, respectively. Ovals, ½ in. x ¼ in., up $7; others up $2. Half ovals, up $1 to $2. Half rounds, solid, no change to up $3. Equal-leg angles, up $5 to $11. Unequal-leg angles, up $4 to $7. Channels, up $10 to $24. Tees, up $10 to $16. Flats, up $4 to 6. Length and cutting extras, up $1 to $6.

Quantity extras—No change to up $10. Specification and tolerance extras, up $1 to $2 (see table). Miscellaneous extras, down $1 to up $10 (see table).

CR Carbon Sheets

Size extras—gage and width, in gages 19 through 22, off $3 to up $4; in heavier gages, off $2 to up $4; in lighter gages, off $11 to up $2. Length, off $2 to up $2.

Circles, up $1 to $2. Item quantity, no change to up $10. Order quantity, no change to up $3. Quality, no change to up $2. Miscellaneous, no change to off $4. Specification extras, no change. Chemical specifications, no change to up $2. Packaging extras, largely unchanged.

For latest extra changes see p. 159

CR Carbon Bars and Shafting

Size extras—Rounds, ⅛ in. to less than 3/16 in., up $57. Revisions in other sizes range up to $10. Hexagons, ⅛ in. to less than 3/16 in., up $35. Increases in other sizes to up $21. Squares, ⅛ in. to less than 3/16 in., up $85. Other sizes are increased as much as $20.

"Small world! I'm a purchasing agent too."

Quantity extras—No change to up $32. Chamfering, no change. Cutting extras, up $2. Chemical requirements, no change. Chemical and physical testing, up $1 to $31. Furnace treatment, up $5 to $13. Extras for accuracy, largely unchanged. Chemical requirements, no change to up $1.

HR Alloy Bars, Billets, Blooms, and Slabs

Grade extras for standard steels, up $2 to $30, higher increases reflecting increased cost of nickel to steel producers. A grade used extensively by the military, 4340, is up $15; another popular grade, 4140, is up $15. Grade 8620 is up $8. Boron steels are unchanged.

Special processing, unchanged. Special quality, up $1 to $5. Hardenability, unchanged. Bar size extras, unchanged to up $11. Cutting extras, unchanged to up $10. Treatment charges, up $3 to $6. Straightness, up $1 to $8. Pickling, oiling, or liming, up $1 to $6. Quantity extras, unchanged. Blocking minimum, up $10.

Grinding billets, up $10. Billets, blooms, and slabs, size extras, no change to up $1. Machine or torch cutting, up $3 to $10. Treatment charges, up $4 to $6. Grinding, up $10.

The alloy revisions mentioned are based on the Dec. 16, 1949 extra cards as compared with latest quotations and include changes made last March under OPS authority to

—Research—

FOUNDRYMEN: Fo

D-process and speeded mold production dominate American Foundry Society meet.

The jet-propelled research programs of the foundry industry hit fresh pay dirt this year.

Outstanding developments: Initial announcement of the D-process; hotel corridor reports of a 400 pct speedup in the shell-mold manufacturing process.

It was almost a foregone conclusion, as the Chicago convention of the American Foundry Society opened last week, that shell molding would receive much attention.

Heretofore shell molding has at-

—Purchasing—
Continued

pass through higher cost of alloying elements.

Hr Carbon Strip

Size extras—Gage and width, mill edge coils, narrow widths, up $3 to $7; wider widths, up $2 to $5.

Pickling extras, no change to up $1. Cutting extras, no change to up $5. Item quantity, no change. Exact quantity, up $8. Closer than standard camber tolerances, no change. Processing extras, no change to up $2. Quality extras, no change to up $2. Specification, up $2. Specific and restricted test requirements, up $2. Chemical requirements, no change to up $2. Restricted chemical requirements, no change. Packaging extras, off $2 to up $2.

Hr Concrete Reinforcing Bars

Size extras—Up $4 to $6. Length, quantity, and specification extras, unchanged.

HR Carbon Tube Rounds for Seamless Tubing

Size extras—Up $5 to $6. Quantity extras, no change to up $10. Additional restrictive requirements, off $3. Chemical requirements and tests, and packaging extras, no change.

n Shell Molding

tracted strong interest only from captive foundries, but it appears that a number of jobbing foundries are also becoming interested.

Speakers were careful to point out that shell molding is not a cure-all for every ailment of the foundry business and that it is still a fairly high cost process.

It was stated that parts best adapted to shell mold production are those requiring close tolerances, or those on which sufficient machining can be eliminated.

Discuss D-Process

Without appearing on the program, the new D-process was being examined eagerly outside the meeting rooms. Also called the "contour core-making" process, D-process utilizes a core sand with a vegetable oil binder, blown with conventional equipment onto a contoured drier. The new shell mold is then placed in a core baking oven for a half-hour plus curing time and is baked at between 500° and 600°F.

Compared with the 5 to 6 pct resin content of the conventional shell, the new process uses only about 2.4 pct oil. Oil costs are reported about 14 pct below those of resin, which has been a considerable cost factor.

Equally important, the D-process uses conventional foundry equipment and the completed mold can be stored for 24 hr without protection, longer periods with protection. The molds, when poured, do not need shot or gravel backing.

Conventional shell molders heard that production molds at a rate of 480 per hr have been achieved in the East, using a phenol resin binder and curing for 15 sec at a reported temperature of 600° to 800°F.

The molds stood up well under laboratory testing and have been used for production of parts. The shell-molding machine force-feeds sand-resin mix from below and utilizes two dies shuttling back and forth across the sand hopper.

PIPE: Nickel Plated Fast for AEC

New production facilities will turn out nickel plated pipe for AEC . . . Patented process is simple and fast; gives excellent bond . . . Built big rectifier—*By W. V. Packard.*

Production of nickel plated steel pipe for Atomic Energy Commission will soon be boosted sharply when Bart Manufacturing Corp. starts operating new plating facilities in South Portland, Maine.

Pipe will range from 2 to 54-in. In diam. And production may soon hit 600 tons a month on a 2-shift basis. This will be one of three facilities in the country that can plate pipe of such large diameter.

The new project is being constructed by Walsh-Holyoke Div. of Continental Copper and Steel Industries, Inc. Bart-Messing Corp., an affiliate of Bart Mfg., is furnishing rectifiers and other plating equipment. On contracts for nickel lined pipe Bart Mfg. will work as a subcontractor.

Will Be Widely Used

The pipe will be used in various new AEC projects throughout the country. Bart developed the high speed semi-continuous plating process for the government during World War II. The process is very efficient; nickel loss is kept to a minimum; and adherence is uniformly good. Pipe plated by this process has been successfully resisting highly corrosive conditions for a number of years.

The patented plating process is relatively simple and fast. A long nickel anode is usually inserted and held in the center of the pipe. (Some plating is done with nickel salts.) It is then flooded with a plating solution which has passes through a series of tanks to make sure it is absolutely free from impurities. Pipe is rotated while plating solution is inside. Rotation, plus continuous flow of plating fluid, prevents formation of gases which might get into pores of the pipe and prevent even plating.

Bond between nickel and steel is permanent, the nickel becoming almost an integral part of the steel pipe. Plated pipe can withstand heating, forming, reducing, and other fabrication processes without damage.

Civilian applications of the nickel plated pipe are in oil, chemical, and paper industries.

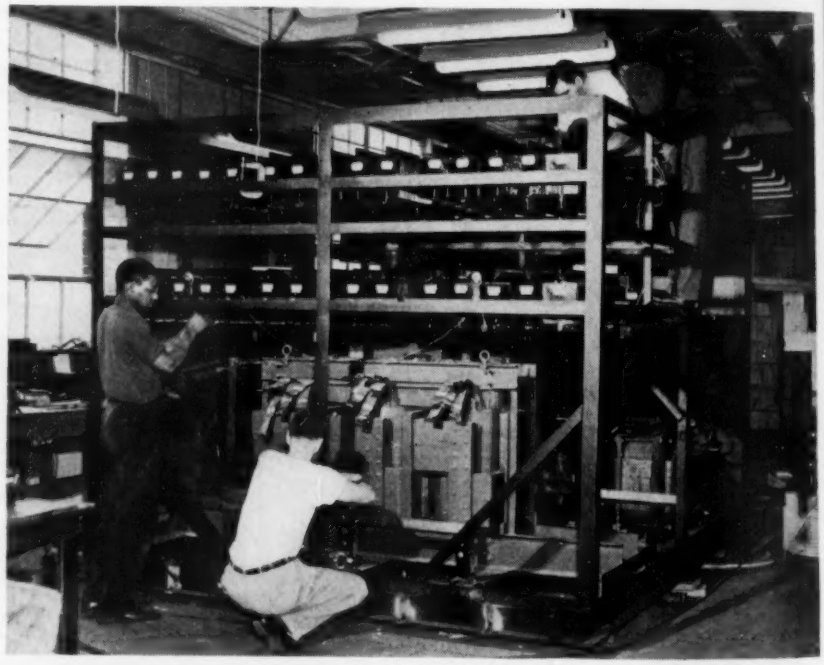
Build Big Rectifier

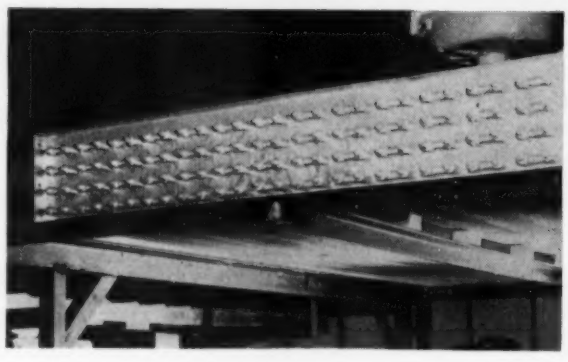
A key part of the new plating facilities will be a huge single cubicle selenium rectifier — believed to be the largest of its type in the world. It will supply dc power, up to 30,000 amperes, for the electroplating. The huge rectifier will be completed by three 15,000 ampere units and several smaller ones.

By utilizing saturable reactors (which have practically unlimited life) moving parts have been completely eliminated in the big rectifier.

No outside air will be used for cooling because of the highly corrosive atmosphere in plating plants. Air within the cabinet is cooled by a large air-to-water aluminum heat exchanger. Temperatures within the sealed unit will not exceed 95°F regardless of outside conditions.

To carry current within the unit, approximately 5000 lb of copper bus bar, a total of 850 ft, was used.





HUGE selenium rectifier beginning to take shape (above) will provide 30,000 amperes dc current for plating. The sealed unit will be kept cool by large aluminum heat exchanger at left.

SPENDING: See No Dip Despite Cuts

Defense expected to cost $43.2 billion next year, compared to $43 billion in '53 . . . Further cuts could change this . . . Congress recommends biggest cut for Air Force.

Defense contractors, informed last week that the Administration had pared its request for fiscal 1954 military funds to $36 billion, will find actual spending moving at about the present annual rate—unless Congress decides to effect further economies in proposed and continuing programs.

Actual defense spending in the next fiscal year is being estimated at $43.2 billion, compared with the Truman estimate of $45.2 billion. This expected drop would place spending about on a par with the rate for fiscal 1953, now seen as $43 billion.

Hopes for Big Cut

Estimated spending during the year ahead is subject to change, however, because congressional groups concerned with the defense budget have barely had time to look at President Eisenhower's request. Chairman Richard B. Wigglesworth, R., Mass., of the House Military Appropriations Subcommittee, says he hopes for a "substantial reduction" in the anticipated spending figure.

Further spending cuts will be hard to achieve, Rep. Wigglesworth admits. But he adds that every possible saving will be considered.

Biggest cut the Administration has recommended is in new money for the Air Force. From that department's request for $16.7 billion, budgetary experts at the executive level have lopped off $5 billion.

Early reports from the Pentagon indicated the Air Force might halt its planned expansion at 120 wings instead of aiming for a 143-wing force in 1955. However, Gen. Nathan F. Twining, named to succeed Gen. Hoyt Vandenberg as USAF Chief of Staff, denied that the higher goal had been abandoned. Reaching the goal, he said, would "take much longer than planned."

Present Air Force strength is about 100 wings.

Navy took a lighter cut, amounting to $1.8 billion. Its request for an $11.5 billion appropriation has been whittled to $9.65 billion, which includes shipbuilding funds totaling $741.5 million.

Army Will Get More

If the Administration proposals are allowed to stand, the Army will gain some money. Having put in a bid for $12.1 billion, the department finds that its recommended appropriation has been boosted to $13.6 billion. Both the Army and Navy plan to keep their combat strengths at approximately the current levels, but foresee the need to cut training and supporting forces.

A breakdown in the revised budget points out that money for Air Force and Navy Aircraft would go from $8.89 billion to $4.89 billion. There would be a trimming of Air Force maintenance and procurement funds from $4.23 billion to $3.2 billion.

In essence, the Defense Dept. says, planned cuts will necessitate better scheduling of production and a limited cut-back in the high-cost spare parts program. Some ammunition and gun production programs reportedly will be increased in the future.

Leftovers Are Big

Whatever Congress decides to do with the Administration recommendation, each military service will carry over into the new fiscal year very substantial amounts of unexpended funds. According to Rep. Wigglesworth, the Army and Navy should show a carryover of about $17 billion each, while the Air Force amount would be $29 billion.

Best available estimates of actual expenditures by military departments during fiscal 1954, based on the estimated spending rate of $43.2 billion are: Army, $16.5 billion; Navy, $11 billion; and Air Force, $15.1 billion. About $600 million would be spent directly by the Office of the Defense Secretary.

Boost Railroad Facilities Goal

Office of Defense Mobilization stands ready to approve an additional $110 million or so in fast tax amortization for additional rail-

CEREBRAL PALSY victim at Children's Rehabilitation Institute, Cockeysville, Md., plays with building blocks having Crucible Steel Alnico permanent magnets. When ordinary blocks proved too elusive for the boy, Crucible developed the magnetic kind.

road facilities, largely in terminals, tracks and shops.

This means that the government has upped its original expansion goal for railroad facility expansion by about $200 million over last year's calculations.

At that time, it was figured the railroads would need something like $300 million in additional facilities.

Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Shell, illuminating, 60000 ea, $249,192, Kwikset Locks, Inc., Anaheim, Calif.

Couplers, draft gears and allied parts, 670 ea, $166,662, Nagor Car Corp., New York.

Generator sets, 44, $187,750, Electric Power Plants Corp., Cadiz, Ohio.

Parachute, bomb, 2093690, $1,769,168, Acme Coppersmithing & Machine Co., Lansdale, Pa.

Wheel assys, 600, $264,870, The B. F. Goodrich Co., Dayton.

Indicator, tachometer, 2500 ea, $224,560, General Electric Co., Schenectady, N. Y.

Indicator, tachometer, 1387 ea, $160,158, Sunbeam Corp., Chicago.

Vibrators, 34242, $129,111, American Bosch Corp., Springfield, Mass.

Power plants, 614 ea, $2,059,981, Fairchild Engine & Airplane Corp., Farmingdale, N. Y., *E. W. Hill.*

Bearings, 10000, $54,500, SKF Industries, Inc., Philadelphia.

Replenishment of combat vehicle parts, 16000, $72,160, Varnatherm Products, Detroit.

Replenishment of tank & combat vehicle parts, 15000, $66,750, Easton Mfg., Detroit.

Lathe, toolroom type, 35 ea, $304,657, The Hendey Machine Co., Inc., Torrington, Conn.

Miscellaneous tractor parts, 27442 ea, $353,645, Caterpillar Tractor Co., Peoria, Ill.

Miscellaneous tractor parts, 25458 ea, $56,913, Schuler & James, Inc., Los Angeles.

Parts for 90 MM gun, 1360, $76,949, Red Lion Cabinet Co., Red Lion, Pa.

Machine, lathe turret, automatic chucking, 4 ea, $96,583, Warner & Swasey Co., Cleveland.

Container, ammunition, 95000 ea, $78,755, Cans, Inc., Chicago.

Shell, HE, M329, 4.2" mortar, 240000, $2,180,195, Hardwicke-Etter Co., Sherman, Texas.

Simulator, booby trap, 230000, $112,175, Monarch Mfg. Co., Fort Worth, Texas.

Tube forgings, 90 MM, 817, $1,213,245, Cabot Shops, Inc., Pampa, Texas.

Fuze, grenade, 3000000 ea, $1,140,000, Frank J. Curran Co., Woners Grove, Ill.

Tube, howitzer, 105 MM, 198, $53,885, Chain Belt Co., Milwaukee.

Fuze, 283000, $541,945, A. P. Controls Corp., Milwaukee.

Primer, percussion, 623000, $150,361, Harper Wyman Co., Chicago.

Link, metallic belt, 18958998, $67,117, Borg-Warner Corp., Bellwood, Ill.

20 MM feed mechanisms, 625 ea, $119,539, Sunbeam Corp., Chicago.

Gear drive, 59,000, Active Gear Co., Chicago.

Shell, HE, 105 MM, 527998 ea, $4,181,744, Thor Corp., Chicago.

Fixtures, lighting, 9000 ea, $64,125, Wheeler Reflector Co., Boston.

Light fixture, fluorescent, 3000 ea, $83,640, Luminator, Inc., Chicago.

Periscope, 2465, $1,169,851, Eastman Kodak Co., Rochester, N. Y., *F. W. Haines.*

Gage, hydraulic pressure, 11617 ea, $148,911, American Machine & Metals, Inc.

Crankcase & stud assy, 397 ea, $69,435, Kindred Aviation Corp., Burbank, Calif.

Set-Asides:

Third quarter defense quotas set by NPA . . . Based on percentages of product.

National Production Authority will direct aluminum producers to set aside 130,000 tons of aluminum for third quarter military and defense rated orders.

Set-asides for copper and brass mill products have been established by percentage of product ranging up to 55 pct except for copper base alloy powder mill products which will be governed by directive.

Set-aside determinations for iron and steel products are expected this week. Steel set-asides are to be governed mainly by percentage of product and by directive.

Regulation of aluminum production under the Defense Materials System is to be governed by the new order issued last week (M-5A) which brings all regulation of primary aluminum production and distribution within one order.

Supply Up 5 Pct

Outlook for aluminum supplies is such, officials said, after allowing for stockpiling, the total amount available for all purposes should be 5 pct above the 371,000 tons of the fourth quarter 1952.

Orders will go out to each producer, fabricator, and smelter "as soon as practicable" as to the amount of aluminum forms and shapes to be reserved for defense orders.

These should be delivered by May 15.

Copper and brass mill products are to be governed after July 1 by a new order (M-11A).

It applies particularly to producers and sellers of intermediate shapes and to producers and distributors of brass mill products, copper wire mill products, copper powder mill products, and copper foundry products.

Producers of those items except intermediate shapes will be required to reserve mill space to fill A through E orders, based on percentages of their average monthly shipments during the first 6 months of 1952—a new base.

"How does it feel to be a partner, son?"

Order Aluminum Backlog Cleanup

National Production Authority moved last week to wipe out the backlog of military and atomic energy orders held by aluminum producers by requiring shipments equal to one-third of the backlog during each month of the third quarter.

These are to be over and above rated orders for the quarter, according to Dir. 1 to M-5A.

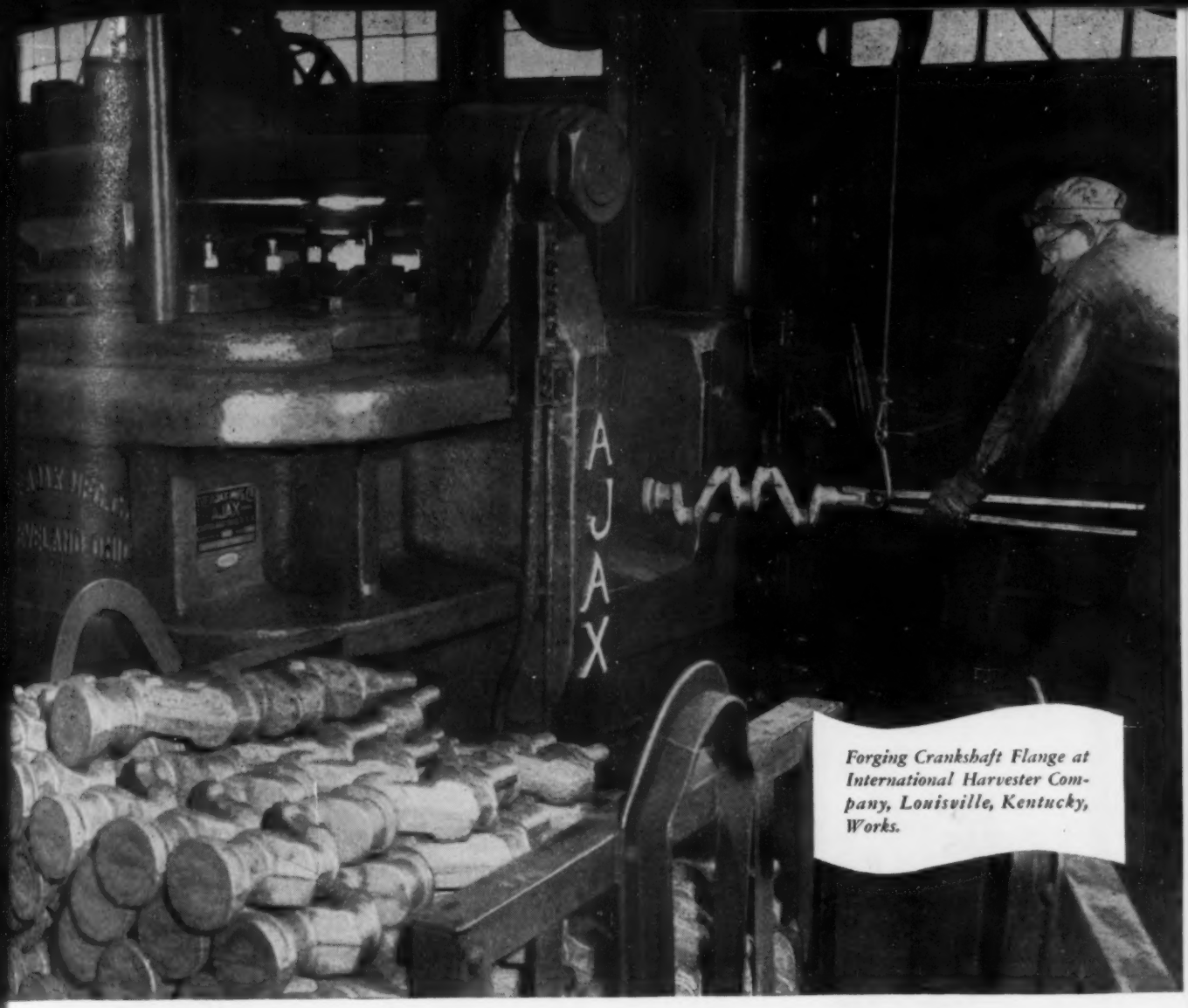
Carryover orders must be provided for before delivery of current rated orders. This is in accordance with the order of precedence among controlled materials orders in Sec. 8 of M-5A.

Fix Building Machinery Setaside

Manufacturers of specified construction machinery will be required to reserve 35 pct of base period production during third quarter for defense rated orders.

Under a new order (M-43A) issued last week after revocation of M-43, rated orders for the selected items must be accepted up to 35 pct of base period production (first 6 months 1950) or shipments — whichever is greater.

In drafting the order it had been originally planned to put the set-aside at 50 pct. Changed military requirements now make it possible to hold the reserve to 35 pct.



Forging Crankshaft Flange at International Harvester Company, Louisville, Kentucky, Works.

★ Another job for the AJAX Upsetter

In forge shops all over the world, AJAX Upsetting Forging Machines are being chosen as the best piece of hot metal working machinery for a wide variety of jobs in diversified fields of forging. Some forge shop operators favor AJAX Upsetters because of the steady production flow from these air clutch operated machines. Other shop operators may choose the AJAX because the greater rigidity and more accurate alignment provide better filling of the die impressions with a minimum of flash. While still others may be thinking of the saving of the wear and tear on manpower due to the ease of operation.

With all of these important advantages and economies, it is very natural that Ajax Forging Machines continuously maintain a high percentage of productive time.

WRITE FOR BULLETIN 65-C

THE Ajax MANUFACTURING COMPANY
EUCLID BRANCH P. O. CLEVELAND 17, OHIO
110 S. DEARBORN ST. CHICAGO 3, ILLINOIS
DEWART BUILDING NEW LONDON, CONN.

Industrial Briefs

Going Up . . . PETER A. FRASSE & CO., INC., is now constructing a new office and warehouse building on a tract of land located on Locust St., Hartford, Conn.

Labrador Ore Cars . . . PULLMAN-STANDARD CAR MFG. CO., Chicago, has started delivery from its Butler, Pa., plant of the first of 1200 specially designed 95-ton ore cars to be used by the Quebec, North Shore & Labrador R. R. to haul ore 357 miles through the Canadian wilds.

Appointed . . . THE YALE & TOWNE MFG. CO., Philadelphia, has appointed the Materials Handling Products Corp. of Syracuse as its distributor.

To Start . . . NORTHROP AIRCRAFT, INC., will begin construction within the next 2 weeks on new flight testing facilities at Palmdale Airport, Calif.

Banner Year . . . LAKE SUPERIOR MINES SAFETY COUNCIL will hold its 29th Annual Conference at the Hotel Duluth, Duluth, Minn., on May 21-22.

Entering Field . . . TRIANGLE CONDUIT & CABLE CO., INC., will enter the copper and brass tubing field when its mill in New Brunswick, N. J., is completed.

Green Light . . . SOUTHERN SERVICES, INC., Birmingham, an affiliate of The Southern Co., has been granted permission by Atomic Energy Commission to participate in atomic energy research.

Carbide Plant . . . ADAMAS CARBIDE CORP. is erecting a new million dollar plant for the production of tungsten carbide tools, tool tips, dies, wear parts and powder at Kenilworth, N. J.

New Sales Dept. . . . TENNESSEE COAL & IRON DIV., U. S. Steel, has established a new Sales Dept. for its Tin Mill Products Div.

Big Job . . . FEDERAL ELECTRIC PRODUCTS CO., Newark, N. J., has received a quarter-million dollar order for the first major overhaul of the Panama Canal since it was built 40 years ago—new motor controls for the locks.

Forging Ahead . . . AMERICAN CAR & FOUNDRY CO has forged the first 8-in. high-explosive shell in a multi-million dollar contract for the Army, received only 4 months ago, at its Berwick, Pa., plant.

Ingot Available . . . THE DOW CHEMICAL CO., Midland, Mich., reports the availability of a new magnesium alloy ingot patterned to the needs of the commercial magnesium die casting industry.

Dividend Declared . . . METAL & THERMIT CORP., New York, declared a dividend of $1.75.

Engineering Office . . . THE BABCOCK & WILCOX CO. will open its third engineering office in Florida in Miami with J. E. V. Dingemans and W. H. Barrere in charge.

Plays Host . . . AJAX ENGINEERING CORP., Trenton, N. J., was the host on April 24th to the Austrian Electrical Heating Industry Team, a group of engineers from Vienna who are visiting various industrial plants in this country under the auspices of the Mutual Security Agency.

Extrusion Presses . . . HYDRO-PRESS, INC., New York, has received an order for two Self-Contained Oil-Hydraulic Extrusion Presses from the Reynolds Metals Co., Richmond, Va.

Combined Operations . . . SALEM-BROSIUS, INC., stockholders recently approved their company's merger with American Cladmetals Co., and the companies combined operations last week.

Branch Office . . . ALLIS-CHALMERS MFG. CO'S General Machinery Div., has opened a new Des Moines, Iowa, branch office in the Savings & Loan Bldg., 206 Sixth Ave., with Edward A. Rensch, in charge.

At Your Service . . . THE COLORADO FUEL & IRON CORP. has opened a huge new warehouse and sales center for steel products, chemicals and fuel in Wichita, Kansas.

Feature Product . . . ALUMINUM CO. OF AMERICA will feature a mammoth welded aluminum diesel engine base at the Railway Supply Manufacturers' Annual Meeting, June 22-27, in Atlantic City, N. J.

REVERE OFFERS 4-WAY COLLABORATION

Revere offers you more than metal. You can benefit from our four-way collaboration, and we suggest you look into these extra services.

1. Revere salesmen often save customers money. They may recommend a less expensive alloy if it will serve as well as a more expensive one. Or they may suggest an extruded shape, costing more than plain bar, but saving important sums by reducing costly machining operations. They are capable of giving sound advice, because they are well trained and experienced, and take a sincere and informed interest in the welfare of buyers.

2. The Revere Technical Advisory Service was established by Revere over 20 years ago, as a nation-wide organization whose duty it is to collaborate with engineers, designers and production men, seeking ways to solve problems, cut costs, improve products, or all three.

3. The Revere Research Department operates a laboratory, staffed by engineers and scientists, and equipped with the latest scientific apparatus, including the spectrograph and X-ray diffraction. This Department is called upon by salesmen and Technical Advisors when they find it necessary to obtain thorough physical and chemical analyses, and base their recommendations upon such findings.

4. The Revere Mills, located in industrial centers from coast to coast, are an integral part of our organization, collaborating closely with the other three services. They give you exactly what you require, as to alloy, size, gauge, temper, finish, and their experience is often invaluable in helping to solve tough problems.

Please note that this four-way service, originated by Revere, does not take the place of your own engineers, designers or production men. It collaborates with them, confidentially. There is no charge or obligation. To obtain this service, get in touch with the nearest Revere Sales Office.

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• • •

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere.

SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

COPPER ★ BRASS ★ ALUMINUM

Ford Is Hale and Hearty At Fifty

Ford Motor Co. stressing future as it passes mid-century mark . . . Decentralization a major feature . . . Continue plant expansion . . . Research key to future—By *R. D. Raddant.*

The point about the Ford Motor Co. today is not where it has been, but where it is going.

With a nod to history and appropriate deference to the legendary Henry Ford, the former makers of the Model T and the pioneers of the $5 day are charting a course that will keep the Ford name a household word and the Ford car a dominant factor on the highway.

Can't Look Back . . . Few of those who are charting this course helped in development of the Model T, or even much later models. In fact, some of them are scarcely old enough to remember it well. Few Ford workers remember when they drew only $5 a day.

It's probably just as well. Present Ford executives, including the three young Fords, Henry's grandsons, are the first to admit that in today's market there is no time to look back, even on the 50th anniversary of the company.

Rouge Not Alone . . . So at this time it might be a good idea to take an inventory of what Ford has up its sleeve and what can be expected to come out of Dearborn in the next few years.

In fact, one of the outstanding features about the present Ford Motor Co. is that not everything will come out of Dearborn. The giant Rouge plant may still be the largest single manufacturing establishment in the world, but Ford now has plants and facilities employing 168,000 in 28 states from coast to coast.

Charts New Courses . . . Ernest R. Breech, executive vice-president of the company, is the man who does most of navigating under Henry Ford II, youthful president of the company his grandfather founded 50 years ago.

Under Mr. Breech's planning, in the past 8 years Ford has added 14 manufacturing plants, 5 new assembly plants, and 19 new parts depots and warehouses, besides expanding and modernizing some 30 other plants and facilities.

Automotive Production
(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
May 9, 1953...	151,195*	30,928*
May 2, 1953...	151,028	33,772
May 3, 1952...	102,190	28,347
Apr. 26, 1952...	100,912	27,490

*Estimated Source: *Ward's Reports*

All this has cost more than $900 million to date. In the next few years another $500 million will be spent for more expansion and modernization. Only modernization has gone into the Rouge. New plants and facilities have been decentralized. Even those in the Detroit area have been or are being erected in scattered locations.

Research Is Key . . . The new Ford plants have been widely discussed as the most modern, most highly mechanized in the industry. Critics say they may be too much so, that all the frills would not be there if Ford had a million dividend-hungry stockholders instead of a family council.

But probably the heart of Ford empire and certainly the key to its future is the $80 million Research & Engineering Center which will be dedicated next week (May 20). It now has four new buildings, will be completed in 1958.

A $11,500,000 styling building is the latest to be completed. Others are the dynamoter building and structures for maintenance and vehicle testing. In this new styling building, of course, future Ford cars and trucks will be designed.

Under Study . . . Included in the center is the scientific laboratory which will be the birthplace of new ideas for the Research & Engineering Center. Here staff scientists will carry on basic studies in many fields relating to transportation, including metallurgy, chemistry, physics, electronics, mechanical and atomic energy applications.

Discussions with Ford scientists reveal that top problems involve behavior of metals under high temperatures and high speed. This is a definite tipoff that Ford is working furiously on a gas turbine engine, a fact they don't try to hide.

What's Coming . . . A look at some of Ford's projects under study in the laboratory give a fair idea of what to expect in the auto industry of the future. Here are some:

New materials adaptable to high speed, temperature and pressure propulsion systems; efficient conversion of fuel to energy in gas turbines and other continuous fuel burning power plants; improvement of physical properties of nonmetallic materials (ceramics, glass and plastics); corrosion resistance, electronic detection and control devices; modification and improvement of physical properties of materials through use of radioactive materials; and a host of similar projects.

Anyone can read into this list almost any type of automotive development his imagination can reach.

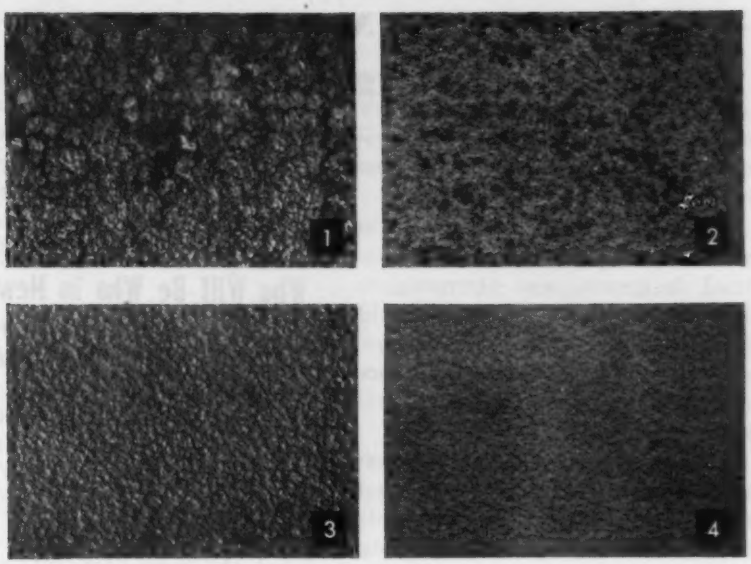
Designers Annoyed . . . Revival of old features of automotive design for new models may seem

Specify

N-A-X HIGH-TENSILE STEEL

for

Longer Life through Corrosion Resistance



Photographs show effects of atmospheric corrosion after six years' exposure of unprotected surfaces.

1. Low carbon sheet steel showing friable heavy rust.
2. Low carbon sheet steel with rust removed showing heavy pitting.
3. N-A-X HIGH-TENSILE sheet steel showing tightly adhering rust.
4. N-A-X HIGH-TENSILE sheet steel with rust removed showing absence of excessive pitting.

Low carbon sheet steel lost four times more weight than N-A-X HIGH-TENSILE in six-year test. With increased time this ratio becomes greater.

N-A-X HIGH-TENSILE, having 50% greater strength than mild carbon steel, permits the use of thinner sections—resulting in lighter weight of products. It is a low-alloy steel—possessing much greater resistance to corrosion than mild carbon steel, with either painted or unpainted surfaces. Combined with this characteristic, it has high fatigue and toughness values at normal and sub-zero temperatures and the abrasion resistance of a medium high carbon steel—resulting in longer life of products.

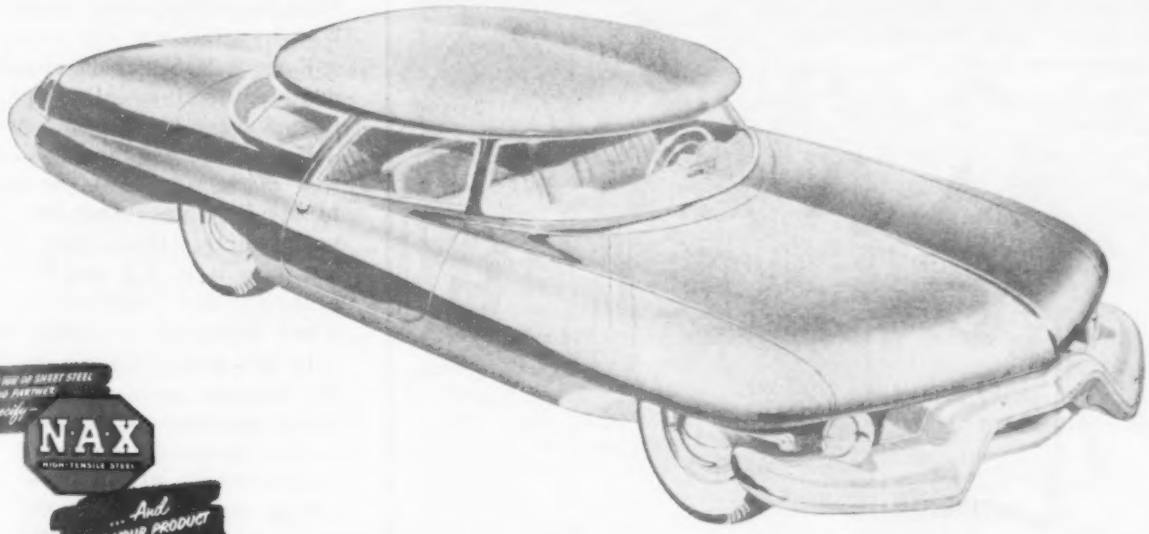
N-A-X HIGH-TENSILE, with its higher physical properties, can be readily formed into the most difficult stamped shapes, and its response to welding, by any method, is excellent. Due to its inherently fine grain and higher hardness, it can be ground and polished to a high degree of lustre at lower cost than can mild carbon steel.

Your product can be made lighter in weight . . . to last longer . . . and in some cases be manufactured more economically, when made of N-A-X HIGH-TENSILE steel.

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division — Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION



Have a ride on Sheet Steel on Parade! Specify N-A-X HIGH-TENSILE STEEL ... And "MAKE YOUR PRODUCT LAST LONGER"

KEEP YOUR SCRAP MOVING TO YOUR DEALER

silly to a lot of people. But they are downright irritating to industrial designers who promote new ideas.

Montgomery Ferar of the firm of Sunberg-Ferar, Detroit industrial designers, was prompted to remark that manufacturers should place greater emphasis on incorporating new ideas into appearance instead of resorting to retrogression.

Citing wire wheels as "an example of retrogression in product appearance," Mr. Ferar contends that there is no need for turning back the clock.

"Industrial designers possess unlimited ideas for the styling of new and better appearing products," he points out. "There should be continuing evolution and progressive change in product design, thus giving the buying public the dual benefits of year-to-year mechanical improvements and products having a fresh look."

Mr. Ferar has an important point in that new materials and methods, such as the use of fiber glass in cars, are now making it possible to test public reaction to new designs at much less cost. He predicts that this will result in greatly expanded use of models.

Who Will Be Who in New Willys

Details of the Willys-Overland purchase by Kaiser-Frazer are gradually clearing.

It is now established that Edgar F. Kaiser will be president of the new Willys Motors Inc. on the decision of Ward W. Canaday, Willys-Overland president, not to head the new corporation. However, Raymond R. Rausch, vice-president and executive assistant of Willys-Overland, will take the same position with Willys.

John W. Snyder, cabinet member under former President Truman, will stay on as financial vice-president of Willys-Overland, but will not be connected with Willys Motors. Mr. Canaday will also stay on as president of Willys-Overland while details of the stock transaction are completed.

THE BULL OF THE WOODS By J. R. Williams

Shiftless Truck Output Grows

Automatic transmissions got a late start in the truck field, but it may not be long before as large a proportion of trucks have this equipment as in the passenger field.

GMC Truck and Coach Div. of General Motors, first in the truck industry to offer a fully automatic transmission, has sharply increased its production schedules of Hydra-Matic trucks to meet demand from light truck owners.

GMC's schedule for February, March and April averaged 13 pct Hydra-Matic in the light truck category, but future production is aimed at 25 to 30 pct. GMC now has 19 models in the light line with Hydra-Matic.

The transmission has dual range which permits driver selection of the most suitable range for traffic or terrain. The division is also manufacturing an eight speed transmission for a GMC 302 cu in. engine used in military trucks.

Study True Hardtop Convertible

Monopolizing the news in its anniversary period, Ford revealed the first "true hardtop convertible" design. It does the trick with a "Roof-O-Matic" top which lowers automatically.

But don't go out and place your order. The car, the Syrtis, is still only a scale model. It couldn't possibly be in production in less than 2 or 3 years.

Earle S. MacPherson, vice-president-engineering, calls the Syrtis an advanced engineering project designed with the thought that the roof mechanism could be applied to any Ford passenger line. He is not predicting that it may happen, but says it is a sound idea and, probably most important, one for which there is a great demand.

In the model, the top goes into the luggage compartment. A specially designed rear window can be also lowered into the luggage compartment, left in position, or swung overhead so it comes to rest against the back of the front seat as a tonneau windshield.

Wrest Defense Control From Military

Handing top level defense planning to civilians will smooth cooperation between industry and government . . . Construction industry protests materials reporting—By G. H. Baker.

President Eisenhower's decision to switch all top-level defense planning from the military monopoly to civilian control points to improved relationships between industry and government in procurement, research, and development of new weapons.

As White House reorganization plans stand now, civilian executives—and not military officials—will direct the nation's defense establishment after June 30. Mr. Eisenhower's shake-up proposal has been forwarded to Congress and is now being studied by Armed Services Committees of the Senate and House. Unless either chamber specifically votes disapproval of the reorganization plans, they will automatically become law July 1.

Businessmen Wanted . . . Key figures in higher-echelon Pentagon planning will be Defense Secretary Wilson's nine top-flight business executives, who will serve as Assistant Secretaries of Defense. Mr. Wilson is hoping to attract more business executives to his department. And Mr. Eisenhower refers in his reorganization message to Congress to the pressing need in Washington for "executives of the highest type."

Ike's recent blast against the "crazy quilt of promises, commitments and contracts" that his Cabinet inherited from the Truman Administration is based in part on the tangled network of civilian-military control that characterized Defense Dept. operations up until this year.

Source of Blunders . . . Constant jockeying for power among civilian and military officials, plus preoccupation with red tape rather than action have been important factors in many Defense Dept. blunders, including the shortages of ammunition in Korea.

From here on, Mr. Eisenhower predicts, the American people will see a big difference—the difference between "a quiet, steady, long-term improvement in their defense position, and the tempests stirred up by public argument over the artificial arithmetic which is so easy to produce in the defense field."

Protest Paper Work . . . Industry spokesmen are protesting to the U. S. Bureau of the Budget the National Production Authority's proposal to impose detailed new reporting requirements upon defense contractors. All contractors and subcontractors for military and atomic energy orders authorized to receive allotments of steel, copper, aluminum or other scarce metals would be hit by the new reporting order, if put into effect.

Proposed form calls for greater detail and finer breakdowns of the information now required of controlled-materials users. Industry representatives say disclosure of some of the information requested on the new forms would affect adversely the competitive position of individual companies. Cost data and other usually confidential information would then be exposed.

Automobile industry in particular is indignant over the proposed form, and is asking the Budget Bureau to deny clearance to the NPA proposition.

Beats Air Force . . . For the first time in many months, statistics on Army and Navy obligations for military construction, facilities expansion, and major-item procurement show a total greater than the Air Force has run up in these fields.

As of the end of March, Air Force obligations in these categories during the current fiscal year were $11.9 billion. The Navy obligated $6.3 billion and the Army $6 billion in the same period. There was no change during March in the interdepartmental obligations for construction, amounting to $100 million.

Totals given reflect orders placed with military-operated production facilities, as well as contracts with private industry.

In the period July 1, 1952-Mar. 31, 1953, all three military services obligated $19.8 billion for fighting hardware, including planes, tanks, ships, guns, and ammunition. Amounts for construction and for food, clothing, and fuel were $1.9 billion and $2.6 billion, respectively.

Don't Count on Deferments

Employers are cautioned in a new Navy booklet that comparatively few men in the younger age groups now being called by draft boards are eligible for occupational deferments.

Entitled "Navy Contractor's Guide to Occupational Deferment of Essential Employes," the publication was written especially to assist suppliers of materials and services essential to defense. It emphasizes that a single Defense Dept. policy governs deferment procedures for the three military services.

The booklet describes the Selective Service system, discusses deferment eligibility, explains how a request for deferment should be prepared, and outlines available appeals. In addition, the guide discusses deferments for apprentices.

TARIFFS: Ike Urges Close Scrutiny

President recommends extension of Reciprocal Trade Act to give new commission time to study tariffs . . . Reed opposed . . . Democrats support Eisenhower plan—*By R. M. Stroupe.*

Prospects for a thorough study of U. S. trade and tariff policy by a highly placed commission during the remainder of 1953 are growing stronger.

Plans for such a commission came directly from the White House and have been described to Congress in connection with current hearings on proposed changes in the Reciprocal Trade Act, expiring June 12.

As suggested by President Eisenhower, the bipartisan group would have 11 members, of which he would name five. Vice-President Richard Nixon and House Speaker Joseph W. Martin would appoint three senators and three representatives to complete the membership.

Won't Hurt Industry

This body would examine the trade act, and also corollary practices and agreements which influence our economic dealings with foreign countries. Aim of the study would be to find what legislation may be required to insure that we conduct a maximum level of world trade while placing no undue hardship on domestic industry.

As the President sees it, the commission's job would be one of vital consequence, nationally and internationally. If the U. S. decides to place heavier duties on some imported materials, he warns, the net result may be a loss of overseas markets for certain of its products.

Disagrees With Ike

To provide adequate time for the study, the President has asked Congress to extend the trade act in its present form for a year. This suggestion has not brought cheers from Chairman Daniel A. Reed, R., N. Y., of the House Ways and Means Committee, now holding hearings to determine its actions on H. R. 4294.

Introduced by Rep. Richard M. Simpson, R., Pa., the bill calls for a number of changes in the trade act. In particular, it would establish tighter import curbs on lead, zinc, and oil, and add a seventh man to the Tariff Commission to give the Republicans a majority.

Rep. Simpson has made it clear he agrees with the principle of examining all aspects of our foreign commerce and tariff laws in the months ahead. However, he maintains that Congress should act without delay to aid domestic industries beset by economic ills.

JOHN L. LEWIS asking the Senate Labor Committee recently to strike out "lock, stock and barrel" all labor laws passed during the last 21 years.

Many Republican members of the Ways and Means Committee agree with the Pennsylvania legislator. On the other hand, the 10 Democrats on the committee are supporting the White House request for a simple extension.

Why Hold Off?

Last week a group of cabinet officals, led by State Secretary John Foster Dulles and Treasury head George M. Humphrey, took turns in telling the Reed committee why they favor withholding changes in tariff policies until the next session of Congress.

Mr. Dulles, who would prefer no bill at all to passage of H. R. 4294, said a 1-year extension of the standing act would provide a "cushion" between present and future trade policies.

He asserted that the U. S. needs time to explain to friendly nations how and why it plans to change its tariff standards. His view is that some foreign governments fear the Administration will be entrapped by economic isolationism and are uncertain what to expect.

Criticize Special Protection

Later, both Commerce Secretary Sinclair Weeks and Interior Secretary Douglas McKay criticized the portions of H. R. 4294 authorizing special protection for lead, zinc, and oil producers. Mr. McKay assured the committee his department is concerned with problems of mining and oil production. But added that, "We also have a responsibility to see that American industry has adequate supplies of minerals and fuels."

In addition, he said he would consider it "surprising" if the examining commission did not recommend major revisions in tariff laws.

Predict House Approval

Hearings before the Reed committee are scheduled to continue through May 20. When the issue moves on to the House, that body—in the opinion of Rep. Martin—will approve a 1-year extension of the present law.

On the Senate side of the capitol, the finance committee has been keeping an eye on the proceedings, but is withholding announcement of its own plans.

Revoke National Rubber Order

National Production Authority last week revoked its rubber order (M-2), thereby killing the last of the restrictions on the use of natural rubber, that of pale crepe rubber for pneumatic tires.

Stockpile requirements can now be met easily, NPA said, even though the use of crepe rubber for white wall tires went back up to its former consumption levels of about 5000 tons a year.

What do YOU make that takes wire?

If you make sieves or staples, screws or screens—whatever you make that takes wire—we're pretty sure to have the kind of manufacturers wire you need. Round, flat, square . . . hard, soft, ductile . . . plain, tinned, or bright finished . . . carbon, alloy, or stainless. Altogether we produce over 400 different types of wire which are suitable for practically all everyday wire applications.

But, if you need a special kind of wire, we can supply that too. Our modern plant facilities enable us to draw wire to meet the exact specifications of a special order, and our trained metallurgists are always ready to assist you with any manufacturing problems you may have.

We've been in the wire-making business more than one hundred years, and all of our experience is at *your* service . . . to help you do an easier and better fabrication job.

If you make it of wire... make it of the best!

U·S·S AMERICAN MANUFACTURERS WIRE

AMERICAN MANUFACTURERS WIRE

AMERFINE—*High-quality fine wire.*

AMERSPRING—*music steel spring wire.*

AMERLOY—*alloy heading wire.*

AMERTEMP—*heavy-duty oil-tempered wire.*

AMERHEAD—*uniform heading wire.*

AMERSTITCH—*extra-tough metal stitching wire.*

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AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO

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UNITED STATES STEEL

Shell Molding Growing on Coast

Electric Steel Foundry, Portland, installs fully automatic Croning machine . . . Will produce alloy castings . . . Others plan to enter field . . . Wide aircraft use seen—*By T. M. Rohan.*

Shell molding in the West made one of its biggest strides last week.

A fully automatic machine using the Croning process for making thermosetting plastic foundry molds was put in initial production at Electric Steel Foundry Co. of Portland, Ore.

Built by Sutter Products Co. of Dearborn, Mich., the installation probably cost about $50,000. It is the first 26 x 41 in. pattern size made by the firm and first known automatic type in the West.

Boost Quality, Output . . . Initially the machine is being used to make molds for Type 314 stainless steel gate valve castings. Other alloys will be used later as expected volume of sales increases with improved quality over sand core castings.

Light manganese steel cargo hooks, steel pipe transmission line orifice plate carriers and some other castings are also expected in weights up to 37 lb.

Use Local Patterns . . . After installation of screw type conveyors for the Monsanto "Resinox" resin, a three-man production crew will take over shell removal, pasting, closing and backing up.

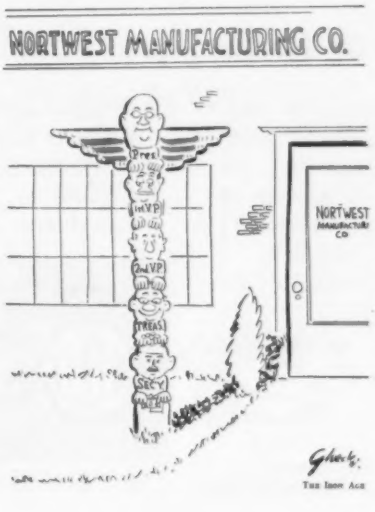
Castings to 25 lb have been poured experimentally without backing up shells using simple U-clamps cut from heavy wire. Production runs of over 4000 units are expected from patterns made by local firms.

Others Entering Field . . . Only other known major firm doing mass production shell molding of stainless steel on the West Coast is Solar Aircraft at San Diego. Apparatus is home-made although modernization is anticipated.

Central Brass Foundry of Portland has ordered one of the small job shop Shallco units being produced by Stanford University graduate students and other Portland firms are also considering starting shell molding. Already much used in automotive plants, the process is expected to gain wide usage in aircraft work for quality finish without machining.

Prices Cut, Boosted . . . Reversing the general trend, Oregon Steel Rolling Mills at Portland last week reduced base prices but the net effect was a slight overall increase. Carbon bars and shapes, structurals and deformed reinforcing bars were dropped $5 a ton but extras boosted about $6 in most cases.

The firm has admittedly been slightly overpriced due to excessive labor costs. These were begun to attract outside talent to Oregon when the mill started up in 1943.



Deeper and Deeper . . . Seidelhuber's troubles at Seattle continue to mount as local unsecured creditors put on the heat. Several involuntary bankruptcy suits are reported pending.

Frank De Bruyn, purchasing agent for the neighboring Isaacson Iron Works, has been installed as manager of the parent Seidelhuber Bronze & Iron Works, majority stockholder. Mr. De Bruyn is acting for Hero Mfg. Corp., formed by creditors to operate the bronze works.

Seattle civic interests are making a concerted effort to save the industry for the area.

Don't Let It Go . . . Hopes for local production of pig iron and possibly steel from Vancouver, B. C., iron ore deposits were given renewed hope last week.

In Vancouver, Canadian Minister of Mines R. E. Sommers said Quebec Metallurgical Industries Ltd. of Ottawa is negotiating with Western Steel Co. Ltd. of Vancouver for installation of a 100-ton-per-day electric ore smelter at Vancouver. Plans call for eventual expansion to 200 tons daily.

The Japanese are regularly hauling out shiploads of ore, much of which finds it way back to U. S. markets as finished steel, especially in sheets.

Ill Wind Dept. . . . In 1898, two gold prospecting brothers named Dormeyer gave up in disgust when they could find nothing but iron ore on Eagle Mountain in southern California. A half century later this deposit is supplying the Kaiser Steel Co., second largest mill in the West.

Recently, two Vallejo prospectors, John Neeley and Arthur Wright, exploring an ore deposit near Grass Valley, Calif., struck gold. Preliminary assays indicated $124,950 a ton—one of the highest initial strikes since the gold rush of 1849.

From fast material removal to satin-smooth finishing . . .

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WHETHER you're surfacing metal, wood or compositions . . . in production, construction or maintenance . . . Black & Decker Sanders are the tools for you! You have your choice of *four* rotary models to drive abrasive discs, saucer grinding wheels, "Whirlwind" wire cup brushes, rotary gouging and planing heads . . . plus the new orbital model that gives a satin-smooth finish 10 times faster than by hand.

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Industry Surveyed on Standby Plans

Manufacturers favor moving defense production equipment to storage sites near plants . . . Plan seen as best compromise on speed, economy . . . Would cost $75 million—*By E. C. Beaudet.*

Forty percent of the current production of military hard goods is now centered in privately-owned plants using government production equipment. This equipment represents an investment of $2 billion. Of the remaining military output, plants owned by government services account for 50 pct and the rest is supplied by privately owned facilities.

Current defense planning favors maintaining a strong productive capacity rather than storing military end items. If and when the present limited mobilization ends, this productive capacity must be kept intact in case of future emergencies.

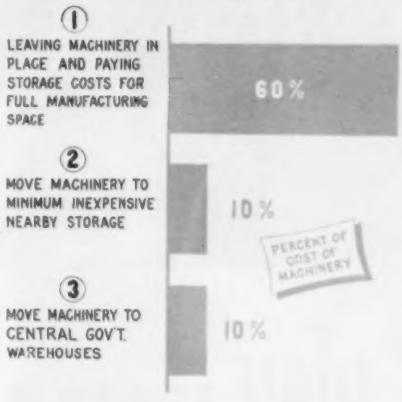
Worries Planners . . . Ways to keep this industrial equipment in a state of readiness without exerting too great a strain on the economy is one of the problems facing government experts.

The greatest difficulty lies with the government equipment operated in privately-owned plants. Military services have the authority to maintain their own plants in standby, but they cannot enter into long term contracts with industry to maintain and store equipment.

Have Three Plans . . . To determine just what such a standby program would cost, members of the Munitions Board and military departments surveyed 18 industrial manufacturers and asked for their views on three different standby plans. The results are contained in the Munitions Board's recent report to Congress on the National Industrial Reserve.

The first plan called for leaving government machinery and equipment in place in the plants. The second plan entailed removing the equipment to storage sites at or near the plants. The third provided for storing the equipment in central government warehouses.

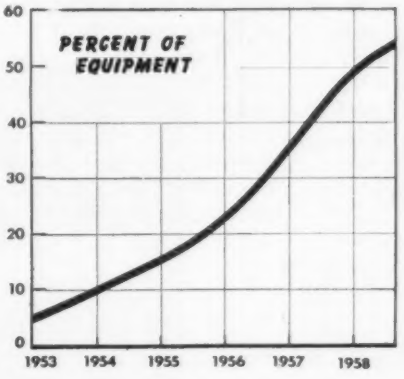
How Much Standby Plans Cost



Cost Too Much . . . Under the first plan, industrial experts believe initial production could be obtained in 5 months and full production in 12 in the event of an emergency, but the cost of carrying through such a plan is regarded as prohibitive. Cost of maintaining equipment over a 5 year period in this manner would run up to 60 pct of the original investment in cost of equipment.

The third plan was also deemed unsuitable since it would take about 12 months to reach initial production and 21 months for full production. Cost of maintaining machinery in standby for 5 years under this plan was figured at 10 pct of original equipment cost.

Equipment Retirement Rate



Second Is Best . . . The second plan, which provides that equipment be removed and stored at or near the production site, was regarded as the best. The report claims that this standby method would permit initial production in 8 months and full production in 14. Cost would be 10 pct of the original investment.

Reserve production equipment could thus be put under the surveillance of the manufacturer. He would be responsible for replacing obsolete tools and maintaining the equipment for a quick shift into production.

Cannibalization of equipment and other abuses resulting from storage at a central depot would be eliminated.

During World War II production was substantially delayed because of central storage methods. In some cases undue deterioration took place, machine tools were damaged in shipment, and some disappeared entirely from the records.

Would Cost $75 Million . . . The rate at which equipment can be put into reserve is a determining factor in the cost of standby programs. If world conditions don't change, the Board figures equipment will be retired at a yearly 10 pct rate during the next 5 years (see chart left). On this basis, the cost of storing all of the equipment would be about $75 million.

The Munitions Board's figures this is a modest sum to pay for retiring over 5 years, $2 billion worth of equipment which is now producing 40 pct of our military hard goods.

"A Triple play BY RB&W REALLY SAVED US PLENTY!"

"It took us by surprise," Al went on, "when an RB&W man told us* he could speed up assembly of this precision screw-and-clamp unit and save us money besides. We figured we'd been doing O.K. the old way."

"What was the old way?" asked Mac, who'd recently started in at the shop.

"Well, it was a one-two-three operation. We used to machine the slotted-head screw for the clamp on that machine over there. Then we'd make a special collar, and fit it around the screw head to prevent the screw-driver from slipping out of the slot while the clamp was being applied or adjusted.

"What RB&W did was to cold-form the whole thing—screw, slot and collar—all in one piece. Wasn't an easy job, either—they had to strike a slot in the screw head and form the collar at the same time. Now we're saving one-third on our previous assembly costs—along with the price of the special collar."

Which proves that you can generally cut costs, if you look hard enough . . . even in such simple things as fasteners. It also underlines the creative approach to fastening problems you can expect from RB&W, as well as practical experience in designing and fabricating. If the fastener you need can't be supplied from our extensive stock, we'll study your assembly operation and make the right one for the job.

Remember—for any fastening operation, it's a smart move to call in RB&W. You can count on RB&W bolts, nuts, screws and rivets for uniform accuracy, dependability and physical properties. And you can also count on fast service from RB&W's strategically located plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, San Francisco. Sales agents at: Portland, Seattle. Distributors from coast to coast.

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

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*George K. Garrett Co., Philadelphia, Pa.

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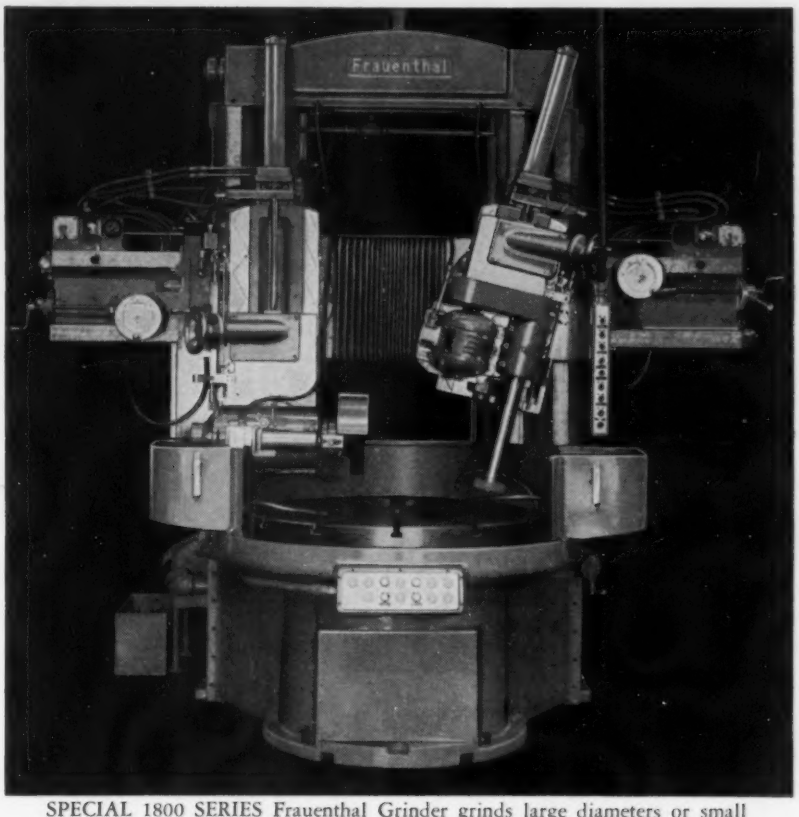
SOLUTION: Special features were engineered into this Frauenthal Grinder, with one direct-connected spindle (at left) and one cartridge-type spindle (at right) for simultaneous grinding. Photo shows right-hand spindle compound swiveled about 10 degrees off vertical for grinding a tapered bore, while left-hand compound has its motor base swivelled 90 degrees, with axis of grinding spindle parallel to face of table for grinding surface with periphery of wheel.

ACHIEVEMENT: Vital precision parallelism and concentricity within 200 millionths of an inch (.000200"); perfect interchangeability of parts: less production and inspection time; lower costs, greater output!



SPECIAL 1800 SERIES Frauenthal Grinder grinds large diameters or small (1-inch diameter) holes simultaneously, to MILLIONTHS of an inch tolerance!

Great grinding range . . . special high-rail clearance for wide variety of precision work:

Astounding adaptability permits Frauenthal Grinders to do many heretofore "impossible" jobs. For miscellaneous work, unique features of this Special 1800 Series Grinder include: Cartridge spindle (right) with 16" extended quill, 30" overall clearance, speeds up to 10,000 RPM; Direct-connected spindle (left) with two-speed 1800/3600 RPM; pendant-type control for work table and grinding spindles; 180-degree pendant-swing; safety switch (cuts out all power at once) . . . and other features you'll find profitable.

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MULTIPLE-HEAD SUPER-PRECISION CYLINDRICAL **Grinders**

PRECISION-GRIND INSIDE, OUTSIDE AND FACES SIMULTANEOUSLY TO MILLIONTHS OF AN INCH!

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Dillon's mechanical pressure gage is a compact instrument designed to measure mechanical pressures or compressive loads even in very limited space. It may be used alone or can be incorporated directly in special testing devices. Each unit is individually calibrated. Complete details are given in a new folder. Covered in another folder is the Dillon stainless steel thermometer. Because of its steel construction, this unit can be safely used wherever vibration, corrosion and shock are common operating hazards. It may be placed into hot materials without preheating. *W. C. Dillon & Co. Inc.*

For free copy circle No. 13 on postcard, p. 16

Autoclaves

Blaw-Knox antoclaves are designed for conducting chemical reactions such as hydrogenation, ammonolysis, polymerization and organic synthesis. Catalog 213 explains the safety measures taken by the company to insure safe operation of the autoclave. Units are available in capacities ranging from 1 qt to the largest commercial sizes. More information is in the booklet. *Blaw-Knox Co.*

For free copy circle No. 14 on postcard, p. 16

Hydraulic cylinders

Vickers extensive line of hydraulic oil cylinders is covered in a new bulletin. Schematic drawings, photographs, engineering data and various informative tables are included in the publication. Illustrated are representative types of mountings available for single or double end piston rods and cushioning arrangements. *Vickers, Inc.*

For free copy circle No. 15 on postcard, p. 16

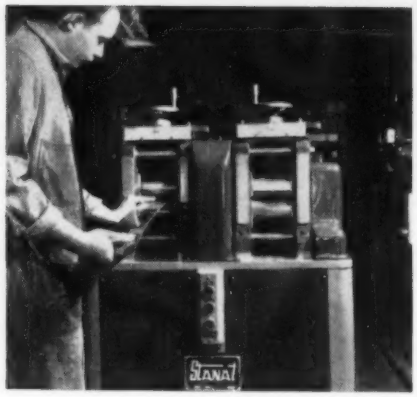
Molding powder

Thirty case histories of successful uses of nylon molding powder are outlined in a booklet available from Du Pont. In addition the booklet also contains a listing of other literature available on nylon molding powders. *E. I. du Pont de Nemours & Co., Inc.*

For free copy circle No. 16 on postcard, p. 16

NEW EQUIPMENT

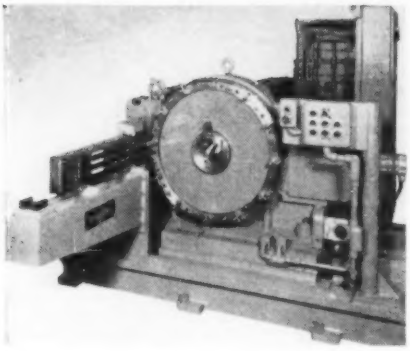
New and improved production ideas, equipment, services and methods described here offer production economies . . . just fill in and mail the postcard on page 103 or 104.



Small rolling mills are rugged and versatile

Many features formerly associated only with heaviest type equipment are embodied in a new line of 3 and 4-in. rolling mills. Through the use of standard, interchangeable parts, units can be tailored to meet individual requirements. Rolls are flat or grooved to produce a variety of shapes such as round, square, half-round, diamond, or special design. Rolls are also supplied for reducing or compacting small tubing sizes. A typical grooved roll in the 3-in. machine might produce square wire from 0.250 down to 0.040 in. In the 4-in. diam machine, range of sizes can be materially increased. Versatility can be achieved by mounting standard units in various combinations. *Stanat Mfg. Co.*

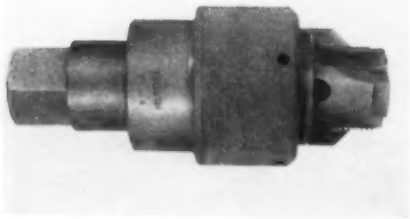
For more data circle No. 17 on postcard, p. 103



External broaching of jet engine parts

Horizontal broaching machines for automatic broaching of external scallops or slots on different types of jet engine rings are basically standard 10-ton, 60-in. and 10-ton, 90-in. stroke horizontal broaching machines. The former broaches three scallops with each pass of the ram; the latter, a single dovetail slot with each stroke. Fully automatic, the work shuttles into the cut and the ram starts. At the completion of the stroke, the fixture recedes and the ram returns to starting position. Part is indexed one increment, and process repeated. Pneumatic or mechanical ejection for finished part is optional. *Colonial Broach Co.*

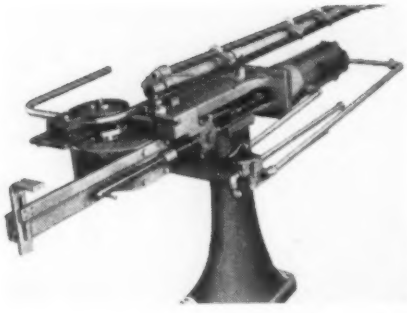
For more data circle No. 18 on postcard, p. 103



Tap threads and chamfers in one operation

Solid adjustable taps are provided for tapping and chamfering pipe and drainage fittings in one operation. There are seven sizes for pipe ranging from 1¼ to 4 in., and are designed for application to Pottstown, Cleveland and other reversing spindle machines. Feature is the incorporation of chamfering blades in the tap body. Tapping operation is performed on the forward portion of the machine cycle; chamfering is completed on the reversing segment of the cycle. *Landis Machine Co.*

For more data circle No. 19 on postcard, p. 103

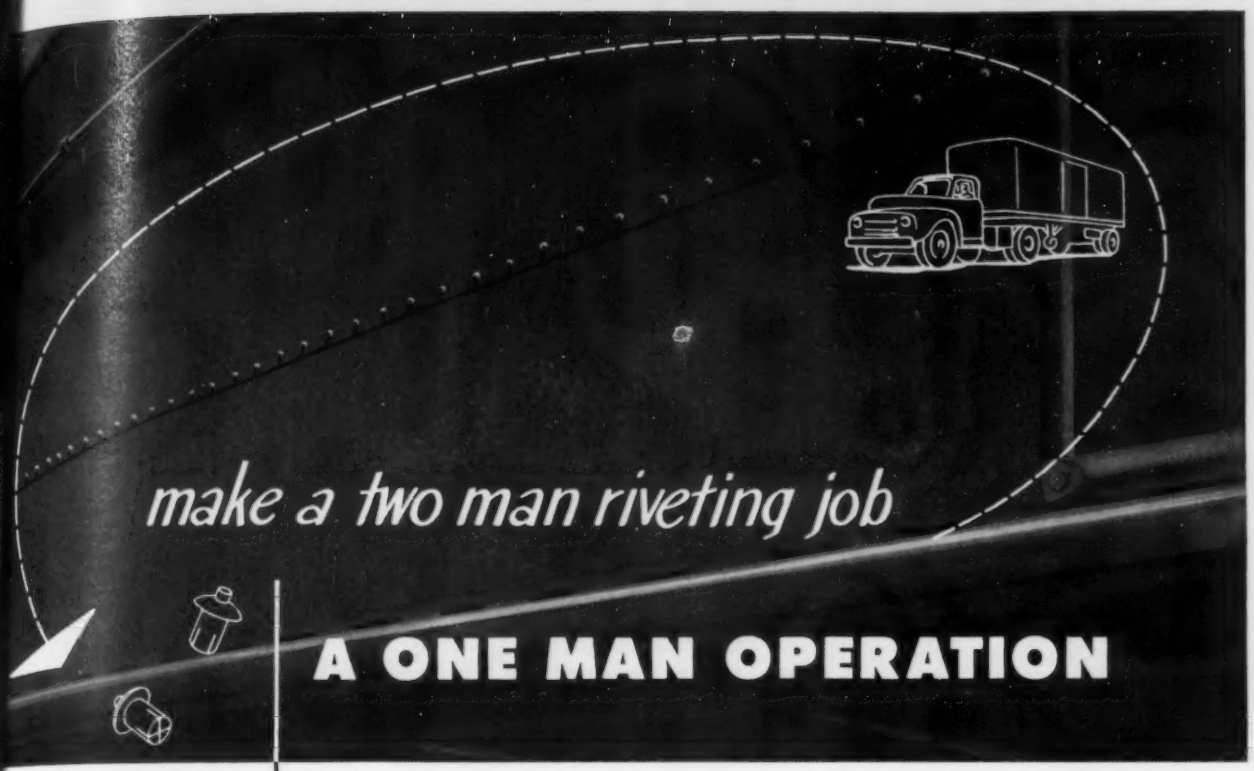


Bender achieves great speed, easier performance

Air powered bending machine automatically bends round tubing, light angles, channels and solid bars. An automatic clamp and needle bearings on the head mount allow smoother, faster performance: 1000 bends per hr are possible with 1⅛ in. OD, 16-gage steel tubing. By varying size of dies and jaws, Bend-Ex is adaptable for a variety of bending jobs: ten bends are possible on a single tube 10 ft long, ½ to 1¾ in. diam. Bending pressure of 80 lb is applied by actuating a hand or foot air valve. *Paul Machine Tool & Die Works.*

For more data circle No. 20 on postcard, p. 103

Turn Page



SOUTHCO DRIVE RIVETS

...speed trailer repairs...cut costs

A large trailer manufacturer uses SOUTHCO Drive Rivets throughout their branches for repair work because they enable one man, with only a hammer and a drill, to do patch work quickly and easily.

These rivets are ideal for "blind" locations because of the automatic pull-up feature which assures a tight joint. And SOUTHCO Drive Rivets won't vibrate loose. They require no finishing operations . . . no clipping, grinding, filing or deburring. Installation is quiet . . . no time is lost waiting for irons to heat . . . in fact no special tools are required . . . and no tool maintenance.

In addition, the smooth heads of SOUTHCO Drive Rivets eliminate the need for molding strips—and on interiors, they won't snag cargos.

Place SOUTHCO rivet in drilled holes

Hit the pin . . .

Automatic pull-up assures tight joint

SOUTHCO Drive Rivets are fast—just hit the pin—they make a strong joint and the automatic pull-up means a tight joint.

How can you benefit from the advantages of SOUTHCO Drive Rivets? Write for complete information to SOUTHCO Div., South Chester Corporation, 1411 Finance Bldg., Philadelphia 2, Pa.

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FASTENERS

PAWL • SCREW AND SPRING • DRIVE RIVETS • ANCHOR NUTS • ENGINEERED SPECIALTIES

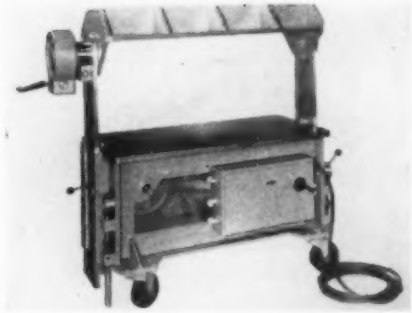
OFFICES IN PRINCIPAL CITIES

WHEREVER TWO OR MORE PARTS ARE FASTENED TOGETHER, STANDARD AND SPECIAL DESIGNS FOR IMPROVED PERFORMANCE AND LOWER PRODUCTION COSTS

Plug welding fastens fish tail on coiled strip

New plug welding technique is used in large continuous rolling mills to fasten the fish tail on coiled strip. The Nelson stud welding gun used in this controlled arc welding operation eliminates the need for banding and hazards which sometimes result. In the plug welding process, special studs are chucked in the gun, grooved so that the lower end is completely melted when the gun's trigger is pulled, leaving a shank connected to the weld only by a small neck. In joining light gage metal, the gun's energy melts the stud end and the adjacent area in both pieces of metal, fusing them together. When heavier plate is to be joined, the top plate is drilled through to provide a well for the molten stud metal. *Nelson Stud Welding Div., Gregory Industries, Inc.*

For more data circle No. 21 on postcard, p. 10



Motorized lift attachment speeds die handling

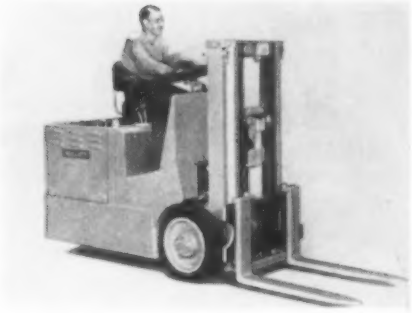
Taking heavy dies apart is speeded up by the Hansford die handler equipped with a motorized lift attachment that drives the upper platen at the rate of 16.3 imp. The attachment is used for rapid movement of the upper section. Fine adjustments are made by means of the hand crank. A safety precaution makes it necessary to disengage the hand crank before connecting the motorized lift, and the motorized lift must be de-energized before reconnecting the hand crank. J.I.C. controls incorporate an approved contactor box on rear of machine. *Hansford Mfg. Co.*

For more data circle No. 22 on postcard, p. 10

Multi-duty tray eases clumsy scrap, parts handling

Work-O-Matic multi-duty material handling tray can easily collect, store, transfer and dump hard-to-handle materials. Open at both ends to permit such materials to overhang, the multi-duty tray is made of seven-gage steel with double corrugations for added strength. In dumping operation, the fork-truck operator selects the discharge point which remains constant throughout the entire dumping cycle. *Union Metal Mfg. Co.*

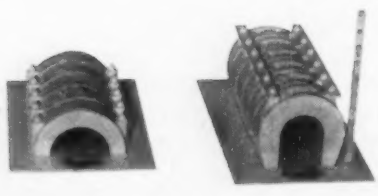
For more data circle No. 23 on postcard, p. 10



Sit-down fork truck has 4000-lb capacity

The new model 430 Yak fork truck features improvements in performance and construction. Performance-wise, its advantages include higher maximum fork elevation to 130 in.; increased free lift of 58 in.; travel speed up 18 pct to 6.5 mph. With its outside turning radius shortened to 79 in., the truck is able to right-angle stack 36-in. long loads in 10½-ft aisles. For economy of operation, chassis weight has been reduced 7 pct to 7925 lb without sacrificing stability. Seat, steering wheel and control mechanisms permit faster, easier operation. *Mercury Mfg. Co.*

For more data circle No. 24 on postcard, p. 10



Magnetic strength increased 50 per cent

A more powerful, re-designed line of low-cost, non-electric, permanent plate magnets for removing tramp iron from material carried in chutes, ducts or on belts, is available in a complete range of sizes. The Perma-Plate magnets have large Alnico blocs of a new design, increasing their magnetic strength by as much as 50 pct. They are Mill Mutual approved for Class A and B installations. Their magnetic strength is guaranteed for the mechanical life of the unit. *Dings Magnetic Separator Co.*

For more data circle No. 25 on postcard, p. 10

Turn Page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STANDARD CUTTING TOOLS
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Industrial Distributors
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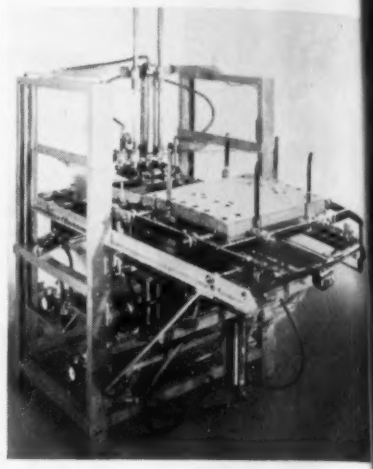
FREE CATALOG TODAY !
Complete with dimensional and ordering information—organized for tool buying convenience. Write for your copy now!

New Equipment

Box folding machine

A pneumatically-activated box folding machine handles, with a minimum of manual labor, the Higgins style box. This is a self-locking, tray-type package which requires no glueing or stitching to assemble. The box is particularly suited to the packaging of items which require extremely high end or side strength and/or high stack-



ing strength. The hopper feed of the machine illustrated is capable of holding up to 100 box blanks which is equivalent to 6 to 7 min of production. Man-power requirement is approximately 5 man-minutes per machine hour. The unit is accurately cycled by means of micro switches which can be deflected only where the blank is in proper position. Machines are custom-made to specification. *Gaylord Container Corp.*

For more data circle No. 26 on postcard, p. 103

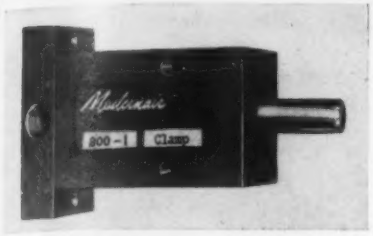
Protective coating

Ucilon 454, an air-drying modified vinyl coating is said to provide a film three to five times thicker than conventional air-drying vinyls. This coating can be applied by brushing and spraying techniques. When sprayed, it can produce dry films of 0.003 to 0.005 in. per coat. Two coats are sufficient for most applications. Ucilon 454 resists acids, alkalies, salts, water and especially petroleum and its derivatives. *United Chromium, Inc.*

For more data circle No. 27 on postcard, p. 103

Air cylinder

Clamp type single-acting air return cylinder has 1⅛ in. bore and is manufactured in 1 and 2-in. stroke models. Body structure and mounting end plate are of bar stock aluminum. Mounting holes permit



vertical and horizontal mounting. Piston rod is stainless steel, piston is brass, and piston seal is standard O ring. A bronze bushing is provided for guide of piston rod. Entire unit is of rugged design and construction. *Modernair Corp.*

For more data circle No. 28 on postcard, p. 103

Demineralizer

For commercial users of reasonable quantities of high purity water and for laboratories, the 1953 Penfield demineralizer features a permanent cartridge, electric purity indicator and a flow meter (a sight indicator for adjusting intake flow to the optimum rate for most efficient ion exchange action).

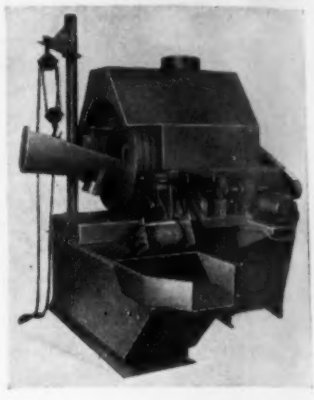
Capable of supplying up to 10 gph of super high purity water, the unit attaches to wall near a tap or can be mounted on a laboratory stand. All that is necessary to secure the demineralized water is to connect the intake hose to the tap, insert the outlet hose in a receptacle, and turn on the faucet. *Penfield Mfg. Co.*

For more data circle No. 29 on postcard, p. 103

Turn Page

Wire galvanizer

Galvanizing wire nails can be done at the rate of 600 to 1000 lb per hr in a new machine that requires floor space of only 10 sq ft. Main cylinder is charged with nails and zinc and heat from the brick lined combustion chamber is from gas or



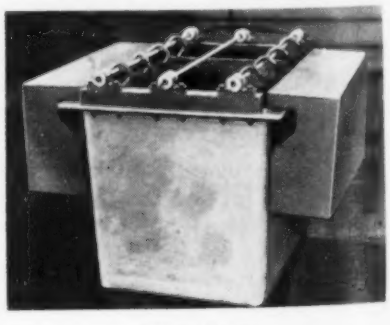
oil fuel. When the load is galvanized the rotation of the cylinder is reversed and the nails are discharged through baffles into water. A mesh belt carries the nails to a drying pan which is heated to speed the drying operation. *Morrison Industries, Inc.*

For more data circle No. 30 on postcard, p. 103

Fiberglas plating tank

Less expensive than lined steel tanks, and equally impervious to chemical attack, a new seamless fiberglas tank can be used with all solutions generally used in the plating field with the exception of caustic cleaner and hydrofluoric acid. Temperatures of tank contents may be as high as 220°F. Tanks can be furnished in any size required. *Hanson-Van Winkle-Munning Co.*

For more data circle No. 31 on postcard, p. 103



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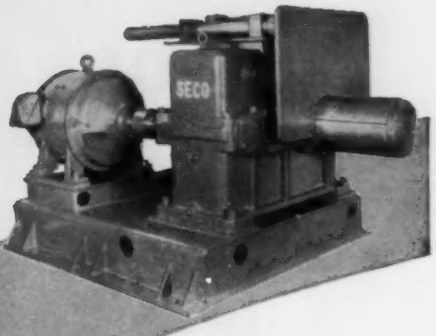
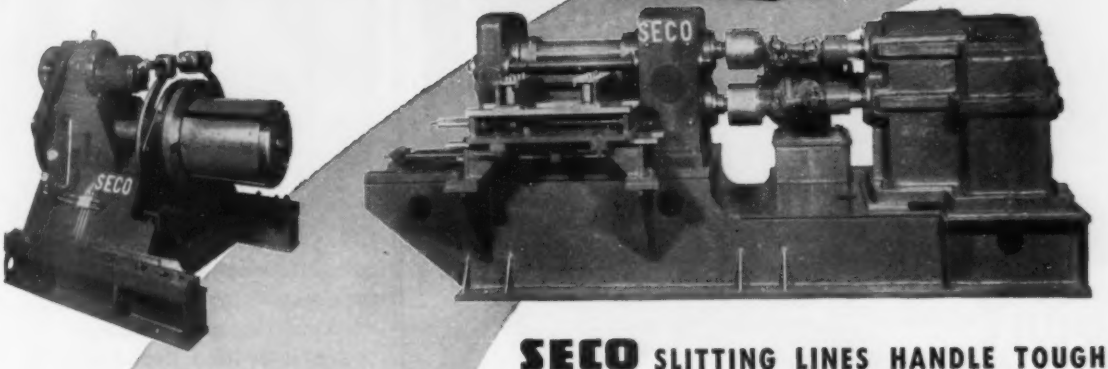
YOU CAN SLIT 1/4" STEEL LIKE PAPER!



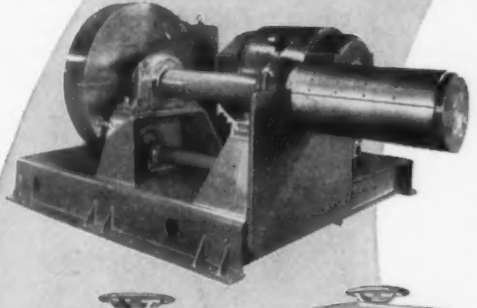


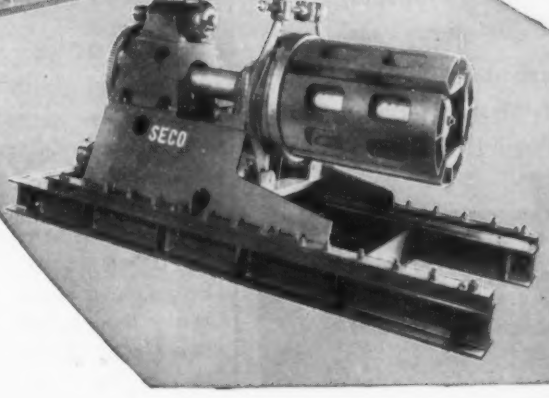
SECO SLITTING LINES HANDLE TOUGH JOBS — GIVE FAST, PROFITABLE PRODUCTION ON HEAVY STOCK

It takes plenty of rugged strength to slit 1/4" steel. But powerful, efficient SECO Slitting Lines can handle this tough job easily and quickly. Production is fast and profitable, with a minimum of down time.

Exceptional quality and accuracy are built into every piece of SECO equipment, large or small. The latest design and engineering features are included — to give you highest efficiency and years of trouble-free service.

Check with SECO today on your slitting requirements. Our engineers will be glad to talk over your problems with you — and there's no obligation on your part. Write for full information.





STEEL EQUIPMENT CO.

Designers and Builders of Steel Mill Equipment

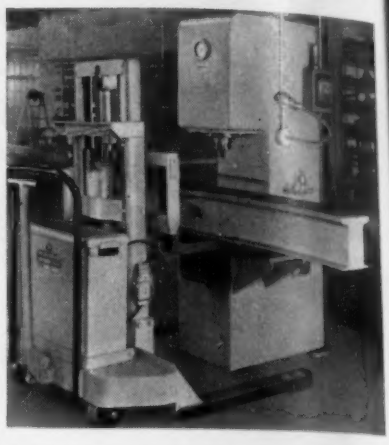
P. O. BOX 737, WARRENSVILLE STATION
CLEVELAND 22, OHIO

● Shown above are two heavy-duty SECO Slitting Lines capable of slitting steel up to 1/4" thick. The payoff reel, slitter and recoiler in the top three photos handle up to 20" width stock. The bottom three photos show a line of simplified design for slitting strip up to 42" wide. Both lines will handle up to 20,000 pound coils.

SECO

—New Equipment—

Continued



Lifting machine

The new Hydrolift straddle-type stacker is a multi-purpose lifting machine for the small shop; fulfills the demand for an all-purpose hand truck in the average plant. It has power hydraulic lift, 4-wheel stability; is lightweight and highly maneuverable. Hydrolifts can operate in a limited area; will stack in a 5-ft aisle; make stacking easy inside of railroad cars or motor trucks. Capacities range to 2000 lb. *Lift Trucks, Inc.*

For more data circle No. 32 on postcard, p. 103

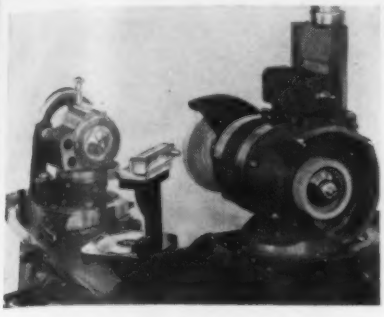
Skid racks

Skid racks made in prefabricated sections are assembled without any bolting or welding. Only tool needed is a hammer. Made of heavy wall, square tubing they are capable of carrying tremendous loads and can be tiered to any height desired. Standard, heavy duty, or extra heavy models are available. *American Metal Products Co.*

For more data circle No. 33 on postcard, p. 103

Angle dresser

For dressing angles on grinding wheels, an inexpensive wheel dresser has a graduated base and 5 min vernier to permit precision setup and dressing. The diamond tool is mounted in a hardened steel block and dressing is accomplished by



sliding the block across the hardened ground surface of the dresser plate. Dresser plate can be set to any desired angle and the inverted T slide permits dressing the wheel on either side. *Royal Oak Tool & Machine Co.*

For more data circle No. 34 on postcard, p. 103

Tractor shovel

Designed with attention to balance, maneuverability and speed, this 1 cu yd tractor shovel has a static load capacity of 5000 lb, turns in a 14 ft radius. It hoists bucket from ground to 8 ft 2 in. dumping clearance in 9 sec and travels at speeds to 18.7 mph forward and 28.2

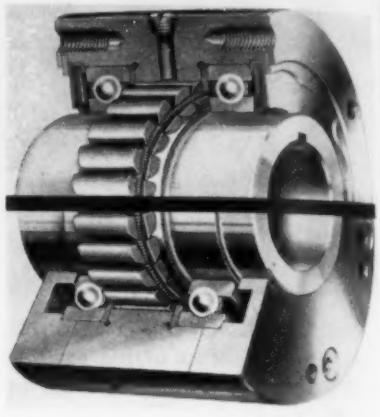
mph in reverse. Torque converter eliminates shock loads on transmission and automatically applies power to meet varying loads. No need to shift gears when loading. Single lever reverses travel direction without shifting speed gears. Rear axle steering is by power booster. *Jaeger Machine Co.*

For more data circle No. 35 on postcard, p. 103

Turn Page

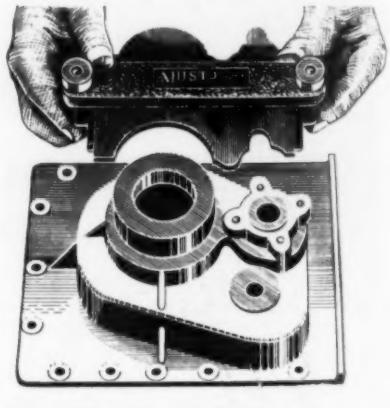
High speeds

A new development makes it possible for over-running clutches to operate at speeds exceeding 3000 rpm. A centrifugal throwout sprag assembly eliminates any possible rubbing between the sprags and



the inner race. This feature is available in the Formsprag all-purpose ball bearing clutch, a standard model with eight possible variations. The sprag principle provides an infinite number of gripping positions and eliminates backlash. *Formsprag Co.*

For more data circle No. 36 on postcard, p. 103



Profile template

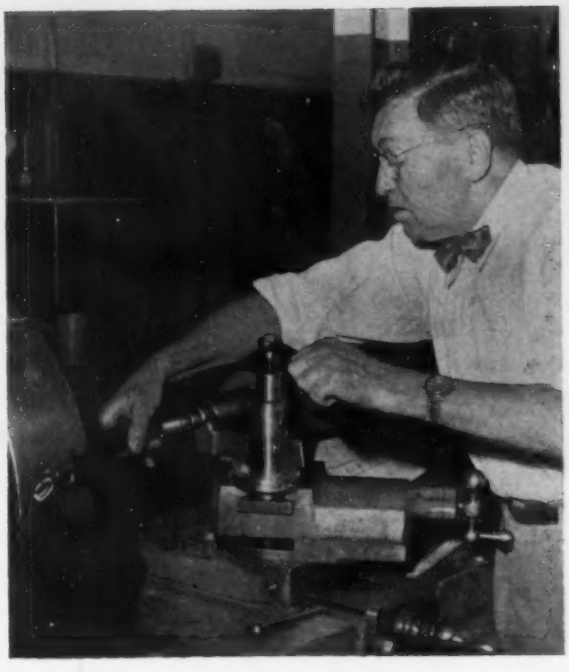
Both male and female profiles are obtained in a matter of seconds with the new Ajusto profile template. It can eliminate hours of painstaking template-making, yet accuracy is assured. The Ajusto is composed of a number of hard brass strips, each one 0.007 in. thick. This permits very close adjustment to practically any profile; provides extremely close tolerances. *Toolcraft Mfg. Co.*

For more data circle No. 37 on postcard, p. 103

The Iron Age SALUTES

Abraham Barchoff

This remarkable executive, only 71, outshines many younger men in skill, strength, and ingenuity.



HE'S a precision machinist, a skilled blacksmith, an ingenious inventor, an active athlete and an able executive. He's 71-year-old Abe Barchoff, president of Eastern Brass & Copper Co.

In his office, you'd guess his age at 50 or so; at work in the forge shop, you'd say 40; trimming his son at handball you'd refuse to believe your eyes. Yet he was an Imperial Russian Army artillery mechanic during the Russo-Japanese War.

Forty-six years ago he started a small stamping and spinning shop in lower Manhattan. Abe liked to keep a good inventory and when materials were scarce other manufacturers would buy his metal. This began Eastern's thriving warehouse business.

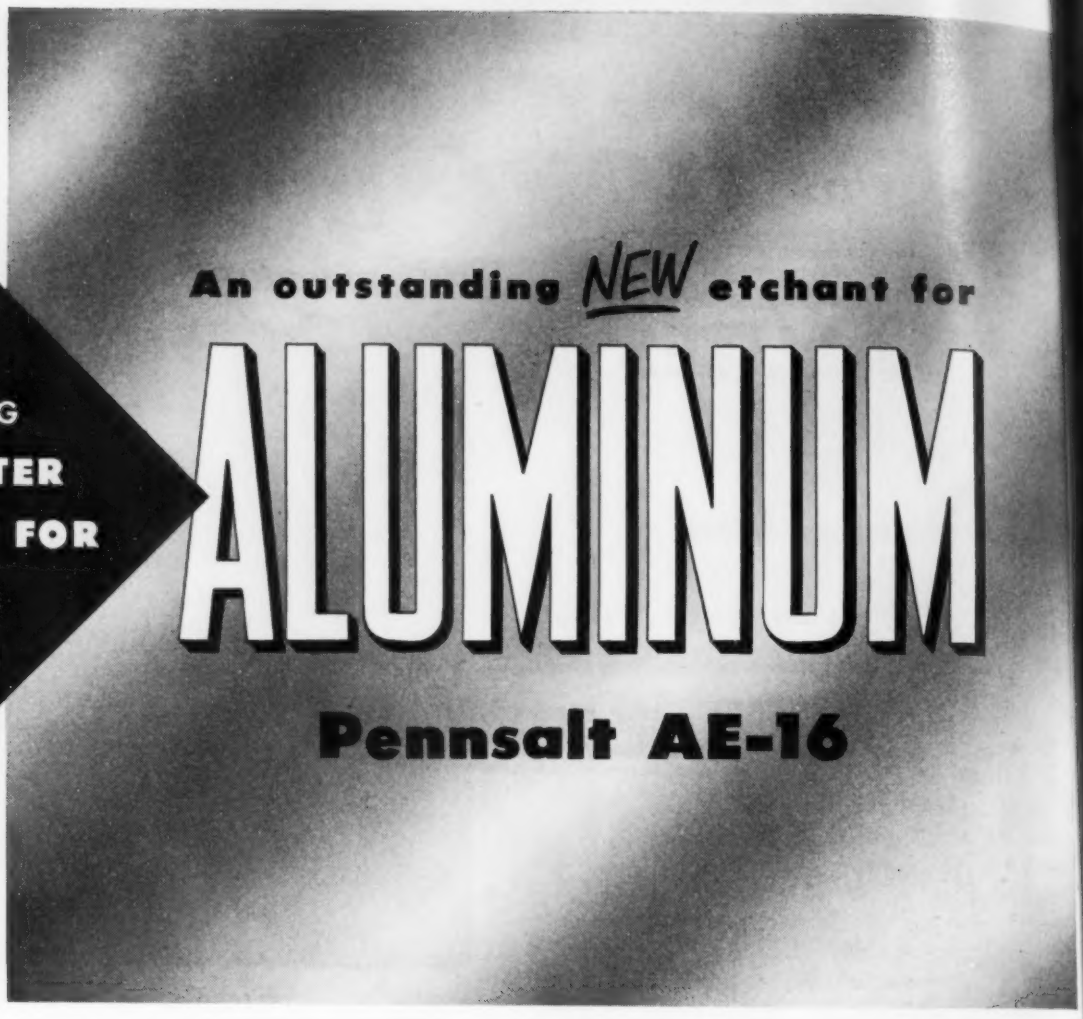
After World War I Abe bought a second-hand slitter for $375 to start Eastern's processing department. Abe's love of machinery and "fussiness" on accuracy made it a super-precision operation.

When the plant's machinery needs parts, Abe is too impatient to order them. He'd rather have Eastern's machine shop make them. And if the machine needs a modification, Abe will design and build it.

Competitors send Eastern their slitter knives for sharpening. And Abe's inventiveness has resulted in many calls for Barchoff-designed equipment. A separate department has been set up to make Abe's crane grapples.

More often than not, you'll find Abe crawling over the machines in the plant. If he isn't there, you'll find him at the anvil in his private smithy. His love of doing it himself practically supports a dry-cleaning firm.

MORE ON GETTING **A BETTER START FOR YOUR FINISH**



non-sludging • non-scaling • long-lived • time-saving • money-saving

Good news for fabricators! With Pennsalt's great new etchant—AE-16—you can give aluminum a beautiful satin finish *without* experiencing the usual headaches of sludge and scale—and at considerable lower cost than with *any* equivalent product!

Here's a case in point: A leading aluminum fabricator ran a side-by-side production test with AE-16 and an old-style etchant. After *nine weeks*, the original tankful of AE-16 had formed no sludge, was still performing satisfactorily! The old-style etchant had to be dumped and recharged twice in the same period.

Of course, AE-16's non-scaling characteristic means reduced tank maintenance costs, also. The AE-16 tank was cleaned by merely flushing it down with a hose—no chipping, no shoveling of rock-like scale.

AE-16 is a *quality* etchant In from one-half to ten minutes at normal tank temperatures, it produces a smooth, even, satin surface that easily conceals die marks and surface flaws. Few additions are required to keep up its working strength, and you'll find Pennsalt's method for determining the concentration exceptionally easy to follow.

All this means less down time, trouble-free operation, lower maintenance costs, increased production. Yet, even with its many advantages, *AE-16 actually costs less* than any comparable product on the market!

AE-16 is part of a complete aluminum preparation "package" Pennsalt now offers to fabricators. To help you use these excellent materials with maximum efficiency, Pennsalt also offers a Metal Processing Service, staffed by specialists in this field.

Further information—on AE-16 or on any of the other products in the Pennsalt "package"—is yours for the writing. Address: Metal Processing Service, Pennsylvania Salt Manufacturing Company, *East:* 284 Widener Building, Philadelphia 7, Pa. *West:* 2168 Shattuck Ave., Berkeley 4, Calif.

The Pennsalt Aluminum "Package"

Pennsalt Cleaner A-27: A new all-purpose non-etching cleaner that thoroughly removes all tough soils, including red and black marking inks. Rinses quickly and completely, even when allowed to dry on the work. Will not streak or stain.

Pennsalt Aldox*: A new powdered, acid-type desmutter and deoxidizer. Replaces nitric acid, does away with carboys and fumes.

Pennsalt Cleaner #85: An alkaline cleaner and deoxidizing agent recommended when aluminum is coated with a heavy layer of oil.

Pennsalt Cleaner MC-1®: An unusually economical general-purpose deoxidizing-type cleaner.

Pennsalt Cleaner EC-51*: A non-staining, organic-type emulsion cleaner.

Pennsalt Cleaner EC-54*: An emulsion cleaner which will not boil off, evaporate, or flash at use temperatures.

*Trade Name of PSM Co.

Pennsalt Chemicals

The Iron Age

INTRODUCES

Clyde H. Reeme, becomes president, UDYLITE CORP., Detroit; **L. K. Lindahl,** will devote full time as chairman of the board; **Lawrence V. Nagle,** becomes executive vice-president; and **Arthur L. Barak,** appointed treasurer.

Albert E. Forster, elected president, HERCULES POWDER CO., Wilmington, Del.

Earle W. Couch, elected president and treasurer, THE LEA MFG. CO., Waterbury, Conn.; and **Richard P. Crane,** becomes vice-president.

Alton G. Wentworth, elected president, THE SEYMOUR MFG. CO., Seymour, Conn.

Edwin J. Cosford, appointed president and managing director of CANADIAN CAR & FOUNDRY CO., LTD., Montreal. He succeeds V. M. Drury, who has retired.

Dr. Albert J. Phillips, elected vice-president, AMERICAN SMELTING & REFINING CO., New York.

Carl B. Allen, becomes special assistant to the president, GLENN L. MARTIN CO., Baltimore.

Walter C. Smart, elected vice-president, TWIN COACH CO., Kent, Ohio.

Carl M. Beach, elected vice-president and director, CINCINNATI MILLING & GRINDING MACHINES, INC.

Charles R. Hook, elected chairman of the board, ARMCO STEEL CORP., Middletown, Ohio; and **W. W. Sebald,** becomes president and chief executive officer.

Herman Harrow, named personnel assistant, Industrial Relations Dept., HOOKER ELECTROCHEMICAL CO., Niagara Falls, N. Y.

John D. Drummond, appointed assistant vice-president, PETER A. FRASSE & CO., INC.; **Leslie N. Stetson,** becomes assistant vice-president; **John M. Brion,** becomes assistant vice-president and assistant treasurer; **Lester E. Brion, Jr.,** named assistant vice-president and assistant secretary; and **Frank M. Daughety,** becomes assistant vice-president.

William Brill, appointed director of engineering, THE COLORADO FUEL & IRON CORP., Pueblo, Colo.

Jay Tomlin, becomes director of public relations, ILLINOIS TOOL WORKS, Chicago; and **Emil J. Koe,** becomes personnel manager, Tool Div.

James C. Hicks, appointed director of refractory research, KAISER ALUMINUM & CHEMICAL CORP., Oakland, Calif.

Robert W. Lea, elected to executive committee, OLIN INDUSTRIES, INC., East Alton, Ill.

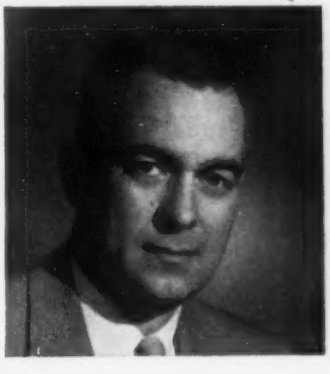
John L. Fleming, appointed assistant director of public relations, ALUMINUM CO. OF AMERICA, at Pittsburgh; and **John M. St. Peter,** becomes special assistant, Public Relations Dept.

C. S. Davis, Jr. elected member of the board of directors, BORG-WARNER CORP., Chicago.

Harold J. Dawe, appointed technical director, THE ACHESON COLLOIDS CO., Div. of Acheson Industries, Inc., Port Huron, Mich; and **Alden Crankshaw,** named sales manager.

Marsh B. Hall, becomes chief engineer, Development & Research Engineering Dept., ACME STEEL CO., Chicago; and **Willard S. Collins,** named assistant chief engineer.

JOHN W. CRAIG, elected president and chief executive officer, Aluminum Industries, Inc.



RICHARD Y. MOSS, elected vice-president and manager, Canton, Ohio Div., E. W. Bliss Co.

ROBERT T. FRISBIE, JR., elected vice-president, The New Britain Machine Co., New Britain, Conn.

Personnel

Continued

Rodger C. Swift, appointed abrasive engineer, NORTON CO., and assigned to the central Illinois territory; and **John W. McCue**, joins the staff of field engineers, Chicago district office.

James Haig, appointed personnel manager, SOULE' STEEL CO., San Francisco plant and office.

Lamar J. Otis, elected assistant comptroller, PITTSBURGH STEEL CORP., Pittsburgh.

William E. Jacoby, appointed controller, THE A. R. PURDY CO., INC., Lyndhurst, N. J.

G. B. Webb, appointed senior process engineer, WALTER KIDDE NUCLEAR LABORATORIES, Garden City, L. I.

William M. Allison, named technical advisor, SPRAGUE ELECTRIC CO., North Adams, Mass.

Dr. Donald H. Madsen, named a research engineer, Heat-Power Dept., Armour Research Foundation of ILLINOIS INSTITUTE OF TECHNOLOGY.

Jack C. Dilling, appointed manager, Indianapolis sales office, Berger Mfg. Div., REPUBLIC STEEL CORP.

P. E. W. Goodwin, Jr., named manager, ROCKWELL MFG. CO., Sulphur Springs, Tex., plant.

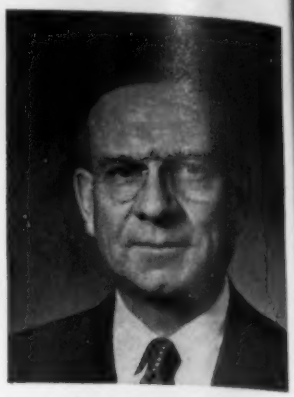
Raymond S. Doherty, named manager of national packet sales, Heating Div., NATIONAL RADIATOR CO., Johnstown, Pa.

Paul A. Roush, named manager-product development, FLEXIBLE TUBING CORP., Guilford, Conn.

Thomas E. Breyley, becomes Midwest manager of engineering and equipment sales, YORK ENGINEERING & CONSTRUCTION CO., Pittsburgh.

James R. McCutcheon, Jr., appointed manager, Piping Supplies Dept., PITTSBURGH GAGE & SUPPLY CO., Pittsburgh.

E. G. Fenton, appointed works manager, EMPIRE STEEL CORP., Mansfield, Ohio.



CLARENCE B. RANDALL, chief executive officer, made chairman, Inland Steel Co.

JOSEPH L. BLOCK, elected president, Inland Steel Co., Chicago.

FRED OSBORNE, elected a vice-president, United States Pipe & Foundry Co., Burlington, N. J.

JOHN LAWRENCE, elected vice-president, Engineering and Manufacturing, Joy Manufacturing Co.

Case History 2A-105

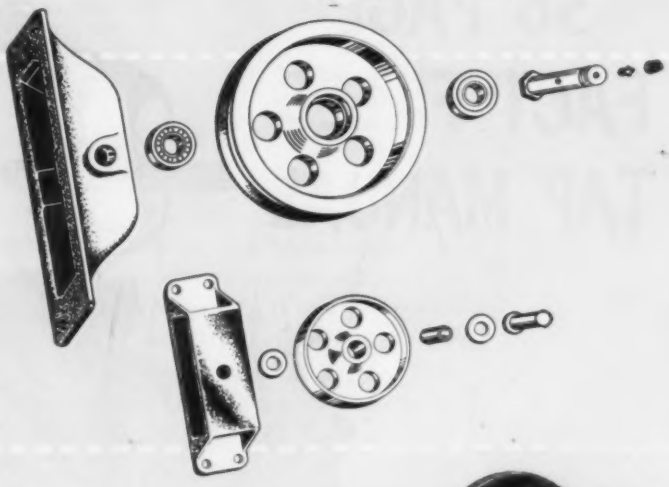
Here's what we mean by SUPERIOR ENGINEERED FOUNDRY PRODUCTS...

PROBLEM:

A manufacturer needed a source of supply capable of designing, machining and assembling complete mechanical units ready for field installation; in this instance, hangar-door hardware.

SOLUTION:

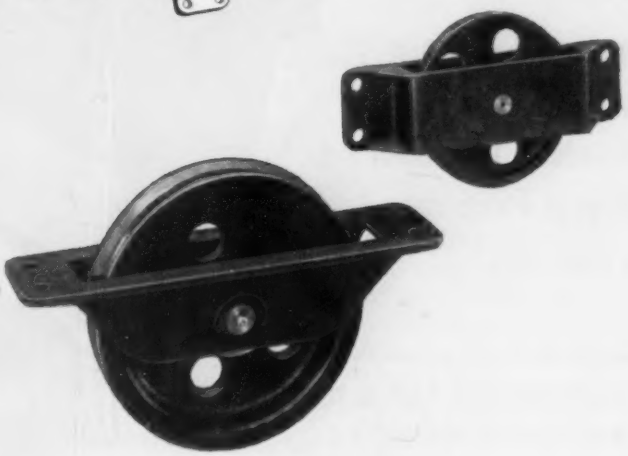
SUPERIOR FOUNDRY ENGINEERED DESIGN castings in malleable iron... machined, assembled, packaged and shipped complete, ready for installation in the field.



RESULT:

No costly designing, machining and assembly problems for the manufacturer ...plus a packaged assembly easy to install in the field for satisfactory service.

You, too, can get advantages like these! Consult our PRODUCT DEVELOPMENT SECTION regarding your problem... while it's still in the planning stage.



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Since 1916

SUPERIOR STEEL AND MALLEABLE CASTINGS CO.

BENTON HARBOR, MICHIGAN, U. S. A.

—Personnel—
Continued

William G. Blessing, appointed manager of purchases, LEWIS MACHINERY DIV., Blaw-Knox Co.; and **R. L. Cramer**, named divisional purchasing agent, Ordnance Dept.

William N. Fooshee, appointed plant manager, Clyde, Ohio, Bendix Home Appliances Div., AVCO MFG. CO., South Bend, Ind.

J. Donald Clark, appointed general manager, THE GEORGE K. GARRETT CO., Philadelphia; and **George Nessenthaler**, becomes works manager.

John C. Steere, appointed district sales manager, R. I., International Machinery Div., BRITISH INDUSTRIES CORP., New York; and **Richard Fraser**, named district manager, Pittsburgh.

Joseph A. Lynch, appointed advertising and sales promotional manager; AEROIL PRODUCTS CO., INC., South Hackensack, N. J.; and **Loyal Lohse**, becomes assistant sales manager to handle Government Sales.

Earl S. Mollard, named general manager of mining and smelter operations in Oregon, THE M. A. HANNA CO.

Thomas J. Hughes, appointed district sales manager, newly created Paterson sales district, Metal Div., CONTINENTAL CAN CO.

OBITUARIES

Emmett A. Williams, 62, vice-president, National Bearing Div., American Brake Shoe Co., at St. John's Hospital, St. Louis, recently.

Wm. Averell Brown, 68, retired secretary, U. S. Steel Corp. and a prominent figure in New York legal and business circles, at his home suddenly.

Joseph B. Petty, 38, director of labor relations, Fontana Works, Kaiser Steel Corp., Fontana, Calif., in an airplane crash while on a business trip recently.

John R. Pettit, 32, assistant to the plant engineer, Hooker Electrochemical Co.

Carroll B. Griffin, 54, assistant head of the Mechanical Development Dept., General Motors Corp., Research Div., after a brief illness, recently.

New 200 series—

The Iron Age
FOUNDED 1855
Technical Articles

Nickel Restrictions Bring Use of NEW STAINLESS STEELS

by R. A. Lincoln
Mgr. Sales Development
Allegheny Ludlum Steel Corp.
Pittsburgh

◆Use of stainless will not continue to double each decade if restrictions on nickel continue . . . Manganese can replace nickel in wide ranges.

◆ Possible chromium-manganese alternates to 18-8 types 301, 302 and 304 have been developed . . . For best properties, the alternates should still contain 3.5 pct Ni min . . . If industry could get such steels approved, our nickel supply could be safely stretched.

◆ STAINLESS STEEL use has doubled in this country in every decade since it was introduced commercially around 1920. Best estimates are that there is ample potential demand to double consumption again in the present decade. Since 1950, it has become increasingly evident that because of limitations on the use of nickel, further expansion will not be led by the 18-8 or 300 series types so popular in the past.

When the first government limitations on nickel were initiated in 1950, Allegheny Ludlum had already done considerable developmental work on a number of chromium-manganese-nickel alloys as possible substitutes for 18-8 types. A promising manganese-nickel austenitic-stainless produced commercially at that time contained approximately 17 pct Cr, 4 pct Ni and 6 pct Mn.

This grade duplicated the corrosion-resistant and other characteristics of 18-8. The government restriction of 1 pct max Ni enforced through control M-80 abruptly ended the life of this grade, but the search for a good alternate continued.

An austenitic alternate for 18-8 stainless which offers good cold-working properties, good weldability and good ductility has now been developed by Allegheny Ludlum Steel Corp. Produced with manganese, chromium and less than 1 pct Ni as principal alloying elements, this steel offers promise of widespread usefulness.[1, 2]

Chromium-manganese-stainless strip is now being produced in substantial quantities and is available in most other forms. This steel is needed particularly where chromium steels are unsatisfactory as substitutes for 18-8.[3] The new grade, however, is not a cure-all, particularly where extreme corrosion resistance is needed. Chromium-stainless steels have proved to be widely useful alloys in their normal applications. During normal times, these applications result in approximately 40 pct of the total stainless production being in chromium steels.

In applications where chromium steels are serving satisfactorily as an alternate for 18-8, it is advisable to continue using them. In applications where critical requirements include the mechanical properties of welds, ductility, nonmagnetic qualities and cold working to high strength, the chromium-manganese steels should

With 1 pct max Ni, the best bet is a 15.5 pct Cr, 17 pct Mn and 0.9 pct Ni steel . . . (IA 201) . . .

be considered. Table I indicates the various chromium-manganese grades which might be used as substitutes for the 300 series stainless steels. Ed. Note—*This table prepared by Iron Age as a suggestion to industry.*

Various experimental compositions with less than 1 pct Ni rolled satisfactorily in 6-in. sq ingots, but the composition had to be adjusted further before larger ingots could be rolled on a production basis. The 0.9 pct Ni composition has been developed to the point that it is a production strip product at Allegheny Ludlum, although there are still limits on quantities available. Where 1 pct max Ni is available, the best alloy that can be made on a production basis contains approximately 15.5 pct Cr, 17 pct Mn and 0.9 pct Ni (IA 201).

Some ferrite is present in the ingot and in the slab. However, during further rolling to strip gages, this ferrite tends to disappear. Fig. 1 shows the structure of a sample taken from a hot-rolled slab. Fig. 2 shows the structure taken from a sheet 0.040 in. thick after cold rolling and annealing.

Where IA 201 matches AISI 301

An example of tensile test results obtained on a typical heat of type IA 201 is given in Table II.

The mechanical properties of chromium-manganese type IA 201 steel match the mechanical properties of AISI 301 very closely with the strength and rate of work-hardening on the low side of type 301 average. In limited tests completed up to the present time, its ability to be fabricated by bending, forming and welding duplicates the properties of type 301 stainless steel. However, this should not be accepted as final.

Laboratory tests are usually not sufficient to definitely establish the suitability of an alloy's corrosion resistance for all variations of service conditions. While laboratory tests give an indication of whether an alloy shows sufficient promise to make it worthwhile to test further, actual service tests on fabricated units should be relied upon for the final answer. From the limiting restrictions of the above statement, the following results of a few laboratory corrosion tests are described.

In order to qualitatively relate the corrosion resistance of this austenitic steel with less than 1 pct Ni in the unwelded, annealed and cold-rolled conditions to other types of stainless steel, the Huey Test in boiling 65 pct HNO_3 was run and the weight losses of five 48-hr periods were converted to inches penetration per month and averaged. Results of a few tests show that the rate of attack is in the range 0.005 to 0.006-in. penetration per month. Thus on the basis of the Huey Test, IA 201 steel has corrosion resistance equivalent to type 430 but not as good as type 301.

Like types 301 and 302 the new steels should be used in applications where resistance to intergranular corrosion after welding is not critical. They are made with relatively high-carbon contents for use in applications where welding is not involved, or where corrosion conditions are so mild that the precipitation of intergranular carbides does not lead to corrosion or where heat treatment after welding is practical.

In order to test the general weldability and to further rate the corrosion resistance of welds in this steel to intergranular corrosion, sheet and strip samples containing approximately 0.09 pct C have been welded by hand-arcwelding using a filler rod of the same composition as well as by resistance welding. In all of these tests,

TABLE I

SUBSTITUTES FOR TYPE 300

Grade	Chemistry					Current Status	Substitute for AISI
Iron Age (tentative)	Cr (min)	Mn (min)	C (max)	Ni	Nitrogen (max)		
201	14.5	15.0	0.15	0.99 max	0.25	Available	301
202	17.0	6.0	0.12	3.5 min	0.25	Killed by M-80*	302
204	17.0	6.0	0.08	3.5 min	0.25	Laboratory heats only	304

* Was sold in limited quantities in 0.15 max C grade prior to limitation order M-80. Used as substitute for 301. Table prepared by The Iron Age—Ed.

FIG. 1—Some free ferrite is usually present in ingot and slabs of IA 201. Above slab sample was etched in oxalic acid for 30 sec, 100X.

the chromium-manganese steel welded satisfactorily and was equivalent to type 301 or type 302 stainless.

Light-gage sheet and strip samples after fusion welding have been subjected to the Krupp Test for 24 hr. These samples bent satisfactorily after testing and no evidence could be found of any intergranular corrosion around welds. When similar welded samples were tested in boiling concentrated nitric acid, a line of attack took place on each side of the weld. This behavior is similar to that found in types 301 and 302.

These results indicate that these steels can be welded satisfactorily without becoming extremely susceptible to intergranular corrosion and, in this condition, will resist corrosion in many applications where the corrosive conditions are not severe, when carbon content is controlled. Weld areas are not expected to stand up under severe conditions where hot chemicals are being processed. Additional testing is now in progress in order to establish the degree to which further control of carbon improves the properties of welds.

The subject of chromium-manganese-austenitic steels is not new. Since 1930 numerous papers have been written describing the results of many investigations. One of the earliest papers is that of F. M. Becket[4] in 1930. Between 1930 and 1940 many papers appeared in the German literature.[5, 6, 7, 8, 9] Results of extensive investigation were published in American literature in 1938[10] and in 1942.[11]

Houdremont[12] described steels in use in Germany in 1943, one of which contained 15 pct Cr, 12 pct Mn and up to 1½ pct Ni. This grade was used in the dairy industry, the beer industry and in general household appliances. This reference also summarizes information on the constitution and properties of these steels.

The above references establish that steels containing up to approximately 13 pct Cr can be made which are completely austenitic if they contain 14 pct Mn min. With higher chromium contents, ferrite is present in the structure and it is not possible to prevent its formation by increasing the manganese content. With higher chromium contents, nickel must be added to the alloy in order to maintain an austenitic structure. Nitrogen is usually present also. American practice has established 0.25 N_2 max. Nitrogen can replace some nickel, but the primary benefit in American chromium-manganese grades is to improve hot-working properties. Over 0.10 pct N_2 is added and the top limit is set at 0.25 pct to preclude fabricating difficulties of the end product.

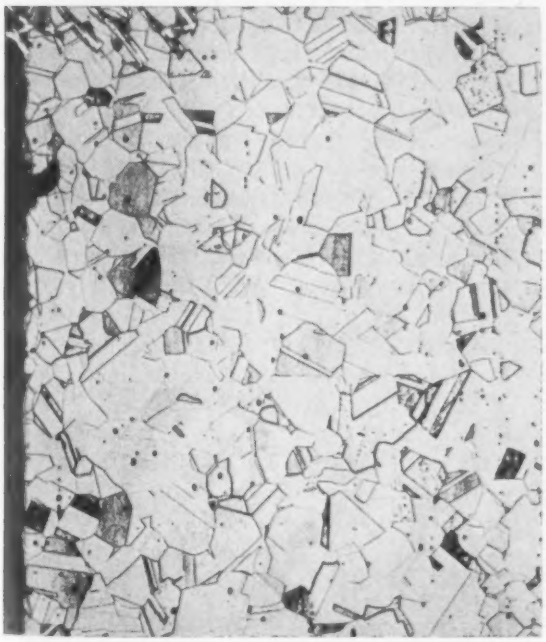

FIG. 2—Ferrite tends to disappear as grade is hot-rolled into sheets or strip. Above sample was taken from cold-rolled and annealed sheet. Etch as in Fig. 1. 100X.

Corrosion resistance better in 301

Experiments at Allegheny Ludlum have confirmed that a steel with 13 pct Cr and 14 pct Mn can be produced with mechanical properties similar to those of type 301 stainless. It is austenitic as annealed. It has a relatively high rate of work-hardening during cold work and its permeability increases similar to type 301.

A steel with 13 pct Cr and 18 pct Mn was found to be completely austenitic as annealed. It had a relatively low rate of work-hardening, and after 30 pct cold reduction permeability of less than 1.02 pct. The corrosion resistance of these steels, on the basis of boiling concentrated nitric acid tests, is estimated to be equal to or slightly better than type 410 stainless steel but not as good as type 430.

These 13 pct Cr steels probably have too low a corrosion resistance except for limited applications, but the latter 13-18 composition might be considered for table flatware where color after polishing is important and certain applications where nonmagnetic properties are the principal concern. Where higher corrosion resistance is necessary, it is possible to increase the chromium

TABLE II

SHEET PROPERTIES, IA 201*

	HR, Anneal 0.09-in. gage	HR Ann. 0.90 in.; CR to 0.078-in. Ann.; CR to 0.062-in.	HR Ann. 0.90 in.; CR to 0.078-in. Ann.; CR to 0.062-in.; Ann.; CR to 0.040-in.; Ann.
Yield Strength 0.2 pct offset	39,830 psi	113,150 psi	43,000 psi
Tensile Str.	100,100 psi	142,600 psi	99,950 psi
Elong, Pct in 2 in.	64.0	21.0	58.0
Hardness	RB 83 to 84	RC 29 to 31	RB 83 to 86

* Iron Age designation of the new grade (tentative). Analysis: 15.32 pct Cr, 17.59 pct Mn, 0.12 pct C, 0.95 pct Ni. Table prepared by The Iron Age—Ed.

If 4 pct Ni were allowed most of our troubles would be over . . . 17-4-6 grade is the best . . .

content and maintain an austenitic structure, but only if nickel is added to the alloy.

At present, development work on the 4 pct Ni-6 pct Mn grades (IA 203 or IA 204) has virtually ceased. This steel was becoming a satisfactory alternate and it might have been further developed as a replacement for many of the 18-8 applications.[13] Using such a material, the available nickel supply in any period of shortage could have been stretched to make twice as much of an acceptable stainless steel. Under existing government regulations, producers can only make as much 18-8 as possible from the available amount of nickel and hopefully dream of a time when more nickel may be on hand.

Production figures for stainless steel since 1935 show that use is still growing rapidly. In the future, that growth may be limited by the availability of austenitic steels. Shortages of nickel promise to be an important and recurring problem controlling future development. Failure to utilize every available pound of nickel to its fullest potentiality could contribute to the loss of markets already developed by stainless steel producers.

Freedom to experiment and develop new austenitic-stainless steels that contain less nickel with manganese replacing some of the nickel offers promise of a partial solution to the problem. It has been demonstrated in production that nickel can be replaced by manganese within wide limits. However, extensive development experience in production is needed in order to establish optimum composition limits. Service tests are required to prove the suitability of new compositions in use.

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[3] R. A. Lincoln, T. A. Pruger, "How and Where to Use 430 Stainless," THE IRON AGE, Part I, Feb. 26, 1953, p. 127; Part II, Mar. 5, 1953, p. 178.
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[7] M. Schmidt, H. Legat, Archiv f.d. Eisenhüttenwesen, 1936-37, Vol. 10, 12, p. 297-306.
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[10] C. O. Burgess, W. D. Forgent, Metals Technology, Vol. 5, 1938, p. 5-21.
[11] R. Franks, W. O. Binder, C. M. Brown, "High Manganese Austenitic Steels," THE IRON AGE, Oct. 1, 1942, p. 51.
[12] E. Houdremont, Handbuch der Sonderstahlkunde, 1943 Springer-Verlag, Berlin, p. 401-404, p. 457-458, p. 483-485.
[13] R. A. Lincoln, W. H. Mather, Journal of the Aeronautical Sciences, Vol. 10, 1943, p. 260.

NEW FILMS

"The Science of Making Brass." Production of modern brass mill products—sheet, rod, wire and tube—is portrayed in this 16 mm sound film. The film, in color and running 29 min describes production of brass products in terms the layman may understand. Extensive animation explains the details of casting, extrusion, drawing and rolling processes. Scenes were photographed in the Chase mills at Waterbury, Conn., and Cleveland, Ohio. Available on loan from Chase Brass & Copper Co., 236 Grand St., Waterbury 20, Conn.

"Porcelain Enamel, The Lifetime Material of a Thousand Uses." A 60-frame, full color strip film tells the complete porcelain enamel story in non-technical language. Covers the early history of the material and brings the viewer up to date with descriptions of modern methods of enameling. Physical properties, spraying, firing, uses are covered. Porcelain Enamel Institute, 1346 Connecticut Ave., N.W., Washington 6, D. C.

"Manufacture of Jet Blades." A new 16-mm film on jet blade production runs 17 min and covers the entire manufacturing process from sinking of the forging dies through the various steps of precision forging, machining and final inspection. A wide variety of blades were used to demonstrate as many types of modern high-precision manufacturing operations as possible. The film, produced by Utica Drop Forge & Tool Corp. and the Carborundum Co., is especially designed for use of industrial arts classes in high schools and colleges. Free loan. Utica Drop Forge & Tool Corp., Utica 4, N. Y.

"Packaging . . . The Third Dimension." Color dynamics, protective package engineering and quality control are stressed in this 3-dimensional tour of a plant making corrugated boxes. Said to be the first 3-D industrial movie ever exhibited. Taken with a 16-mm Bolex camera with special stereo equipment, the film consists of a single film with two series of images. The film is shown through a single projector with duplex lens. First shown at the recent National Packaging Exposition in Chicago. Special projection lens, viewing glasses bring images together. Stone Container Corp., 4200 W. 42nd Place, Chicago 32.

How clean is clean?

Select Coolant Cleaning Equipment TO FIT YOUR JOB

By L. L. Fowler
Filtration Engineer
Barnes Drill Co.
Rockford, Ill.

◆ A trend to higher machining speeds and the need for finer finishes have stepped up demand for coolant cleaning equipment . . . The different cleaning devices offered have caused some confustion among users.

◆ To select the proper device a study of the coolant cleaning problem should be made . . . Consideration must be given to the degree of cleanliness which is needed for each job . . . On some operations several devices are used.

◆ CLEAN CUTTING OILS and coolants are more essential today than ever before. Stepping up speeds, pressures, and the necessity for higher finish require more care and caution in machining operations. As a result, demand has increased for coolant cleaning equipment. The various types of cleaning devices offered, however, have caused some confusion concerning the proper device to use for best results on specific applications.

Coolant contamination comes from the cutting operation itself and other foreign materials carried into the coolant stream. When this contamination is recirculated over the work, it dulls the cutting edges of cutting tools and glazes grinding wheels. The most harmful types of contaminants are metal particles removed from the work at high temperatures and quenched so quickly that they are much harder than the work itself. These particles find their way into the grinding wheels, scratch the work, and are the major cause of wheel glazing.

Other types of contamination are undesirable but not as harmful as hardened metal chips. Larger particles settling to the bottom of the tank generate heat causing the coolant to become too warm for efficient work. To overcome this, coolers or additional coolant capacity are sometimes provided to reduce the temperature. If the cutting coolant is not clean however, cooling devices may become ineffective in a short time.

The most damage to the work surface is caused by the recirculation of smaller particles which do not settle readily. Recirculation of the contaminant may also cause premature wear of bearings and coolant recirculating pumps, resulting in increased maintenance costs. Solids settling to the bottom of the tanks reduce coolant space and must be removed manually. This causes considerable downtime and greater labor costs. All of these hidden costs add up to a very sizable sum in a year's time, increasing cost of the product.

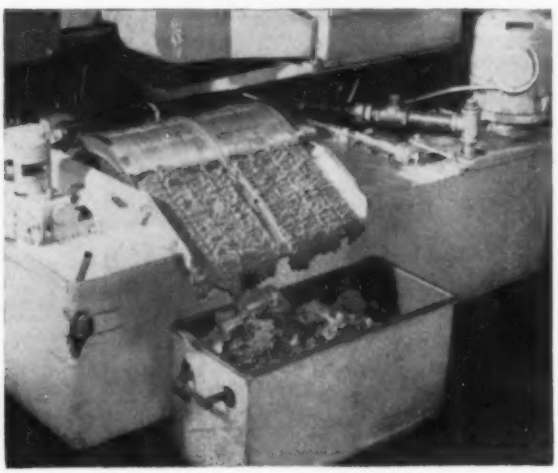
The proper type of cleaning apparatus varies with different machining operations. Rough or surface grinding calls for the removal of large quantities of contaminants that are most objectionable because of the coolant wasted and the labor required to remove them from the machine. On other grinding operations where a high finish is desired, the contaminant load may

Type of operation and degree of cleanliness needed determine the method to be used . . .

be much less but a higher degree of coolant cleaning is necessary to prevent damage to the fine finish. On certain metal cutting operations, such as thread cutting, drilling, broaching and gear shaving, contaminants dull the cutting tool and lodge between the tool and the work causing galling and abrading.

To select the cleaning apparatus which will eliminate objectionable contamination at the lowest cost, a study of the coolant cleaning problem must be made. Consideration must be given to the degree of cleanliness which is necessary for the job. Certain devices are made which clean coolants better than others. Yet the cost for this extra cleaning efficiency is so great that their use is impractical when other cleaning devices with lower operating costs can be used.

The simplest and least expensive method for cleaning coolants and oils is to allow them to settle and then decant off the cleaned liquid. However, many plants cannot devote the necessary space required for this type of cleaning. In broaching, gear shaving, deep-hole drilling and many other metal cutting jobs, magnetic clarification is an efficient cleaning process. It would be impractical to use expensive filtering materials where magnetic energy may be utilized. For higher finishes or coolant-through-the-wheel grinding where it is recognized that the removal of all types of contamination is highly essential, then only apparatus with fine cleaning media should be used.



BIG SAVINGS in grinding coolant achieved with this magnetic clarification unit on a Jones & Lamson thread grinder accounted for a 384 pct return on the investment in the cleaning apparatus.

On some jobs which generate large volumes of contaminants and require a highly refined coolant, several types of cleaning devices are used. In cases of this kind, it is necessary to preclean the coolants by a simple process such as the magnetic method or a settling tank and then follow up with the more positive-type filters which can be operated more economically through the use of the proper precleaning.

A complete analysis should be made of each machining operation to determine the benefits desired from cleaning the coolant. The factors to be considered in such an analysis are listed in the box below. After checking these points, the selection of coolant cleaning equipment will probably fall into one of these main categories: (1) On surface grinding with heavy stock removal, such simple, inexpensive methods as settling, magnetic separation or effective straining should be used. (2) On rough centerless grinding where finish is not a problem, simple, inexpensive methods should be used. (3) On machining operations where metal chips are the main contaminants, magnetic separation is the best method for cleaning coolant. (4) Thread-grinding oils should be cleaned with a magnetic separator followed by a positive filter. (5) Honing oil should be precleaned by magnetic separation and followed by a positive filter. (6) On internal and external grinding where finish is not a problem, simple methods most effective for removing quantities of contaminants with the least cost should be used for saving wheel life, machine cleaning and coolant life. (7) For high finish with small or limited metal stock removal and high percentage wheel breakdown, positive filtration should be used for cleaning. The cleaning application chart on p. 135 can be used for

√

CHECKPOINTS FOR PROPER COOLANT CLEANING

1—Stock removal. Heavy—Medium—Light.
2—Percent of nonferrous grit compared to metal (ferrous) content.
3—Frequency of cleaning coolant tank or sump.
4—Hours of labor required for each cleaning.
5—Machine downtime hours lost.
6—Machine operator's time lost.
7—Wheel life.
8—Frequency of wheel dressing.
9—Coolant changes (frequency) and cost of each change.
10—Finish and quality.
11—Production.
12—Machine coolant pump maintenance.
13—Temperature of coolant being recirculated.
14—General machine sanitary conditions.

CLEANING APPLICATION CHART

For Coolants and Cutting Oils

OPERATION	FERROUS OR NON-FERROUS	STOCK REMOVAL	FINISH REQUIRED	SLUDGE ANALYSIS % METAL TO ABRASIVE	CLEANING RECOMMENDATION
General Drilling	Non-Ferrous	Any	Any	100% Metal (non-magnetic)	Settling or straining
	Ferrous	Any	Any	100% Metal (magnetic)	Magnetic Clarification
Deep Hole Drilling	Non-Ferrous	Any	Any	100% Metal (non-magnetic)	Settling or Straining
	Ferrous	Any	Any	100% Metal (magnetic)	Magnetic Clarification
Oil Hole Drilling	Non-Ferrous	Any	Any	100% Metal (non-magnetic)	Settling or Straining
	Ferrous	Any	Any	100% Metal (magnetic)	Magnetic Clarification
Tapping and Threading	Non-Ferrous	Any	Any	100% Metal (non-magnetic)	Settling or Straining
	Ferrous	Any	Any	100% Metal (magnetic)	Magnetic Clarification
Reaming	Non-Ferrous	Any	Any	100% Metal (non-magnetic)	Settling or Straining
	Ferrous	Any	Any	100% Metal (magnetic)	Magnetic Clarification
Thread Rolling	Non-Ferrous	Any	Any	100% Metal (non-magnetic)	Settling or Straining
	Ferrous	Any	Any	100% Metal (magnetic)	Magnetic Clarification
Wet Milling	Non-Ferrous	Any	Any	100% Metal (non-magnetic)	Settling or Straining
	Ferrous	Any	Any	100% Metal (magnetic)	Magnetic Clarification
Trepanning	Non-Ferrous	Any	Any	100% Metal (non-magnetic)	Settling or Straining
	Ferrous	Any	Any	100% Metal (magnetic)	Magnetic Clarification
Turning	Non-Ferrous	Any	Any	100% Metal (non-magnetic)	Settling or Straining
	Ferrous	Any	Any	100% Metal (magnetic)	Magnetic Clarification
Gear Shaving Gear Shaping	Non-Ferrous	Any	Any	100% Metal-Fiber (non-magnetic)	Settling or Straining
	Ferrous	Any	Any	100% Metal (magnetic)	Magnetic Clarification
Broaching	Non-Ferrous	Any	Any	100% Metal-Fiber (non-magnetic)	Settling or Straining
	Ferrous	Any	Any	100% Metal (magnetic)	Magnetic Clarification
Gear Grinding	Non-Ferrous	Any	Any	High Metal Content	Settling or Positive Filteration
	Ferrous	Heavy Light	Reg. Finish High Finish	High Metal Content High Abrasive Content	Magnetic Clarification Mag. Clarification Filter Comb.
Surface Grinding	Non-Ferrous	Any	Any	High Metal Content	Settling or Positive Filteration
	Ferrous	Heavy Light	Reg. Finish High Finish	High Metal Content High Abrasive Content	Magnetic Clarification or Mag. Clarification Filter Comb.
Cylindrical Grinding	Non-Ferrous	Heavy Light	Reg. Finish High Finish	High Metal Content High Abrasive Content	Settling or Positive Filteration
	Ferrous	Heavy Light	Reg. Finish High Finish	High Metal Content High Abrasive Content	Magnetic Clarification or Mag. Clarification Filter Comb.
Centerless Grinding	Non-Ferrous	Heavy Light	Reg. Finish High Finish	High Metal Content High Abrasive Content	Settling or Positive Filteration
	Ferrous	Heavy Light	Reg. Finish High Finish	High Metal Content High Abrasive Content	Magnetic Clarification or Mag. Clarification Filter Comb.
Grinding with Coolant through Wheel	Non-Ferrous	Any	Any	Any	Settling or Positive Filteration
	Ferrous	Any	Any	Any	Mag. Clarification Filter Comb.
Crush or Form Grinding	Non-Ferrous	Any	Any	Any	Settling or Positive Filteration
	Ferrous	Any	Any	Any	Mag. Clarification Filter Comb.
Internal Grinding Belt Grinding Thread Grinding	Non-Ferrous	Any	Reg. Finish High Finish	High Metal Content High Abrasive Content	Settling or Positive Filteration
	Ferrous	Any	Reg. Finish High Finish	High Metal Content High Abrasive Content	Magnetic Clarification or Mag. Clarification Filter Comb.
Honing	Non-Ferrous	Any	Any	Any	Settling or Positive Filteration
	Ferrous	High Low	High Finish Reg. Finish	Low Carbon Content High Carbon Content	Magnetic Clarification Mag. Clarification Filter Comb.
Lapping	Non-Ferrous	High Low	High Finish Reg. Finish	Any	Settling or Positive Filteration
	Ferrous	Part Contact with Fluid Abrasive Machine Lapping with Solid Abrasive and Regular Coolant			Magnetic Clarification Mag. Clarification Filter Comb.

EXPENDITURE JUSTIFICATION CHART FOR COOLANT CLEANING EQUIPMENT

Maintenance Costs	Before		After	
	Per wk	Per yr	Per wk	Per yr
Machine production loss	7½ hrs @ $5 = 37.50	$1950.00	½ hr @ $5 = 2.50	$130.00
Operator production loss	15.00	780.00	1.00	52.00
Cleaning labor costs	11.25	585.00	.75	39.00
Coolant costs	30 gal @ $1 = 30.00	1560.00	2 gal @ $1 = 2.00	104.00
Coolant pump maintenance	.....	50.00	.....	10.00
Machine rehabilitation	5.00	260.00	1.00	52.00
Wheel costs	40.00	2080.00	30.00	1560.00
Tool costs	.....	.....	.....	.....
Production Costs				
Value of rejects due to finish scratches and abrasions	14.40	1248.80	0	0
Processing cost of parts	.....	.....	.....	.....
TOTALS	.....	$8513.80	.....	$1947.00

−$1947.00

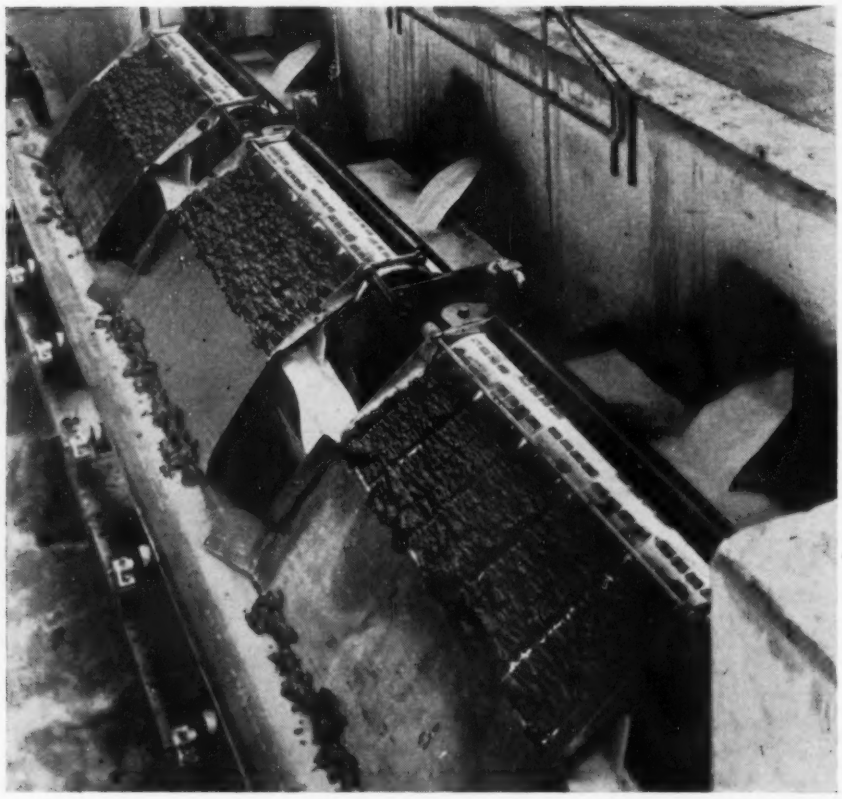
Savings per Year = $6566.80

Savings per Year $6566.80 ÷ Cleaning Equipment Cost $1000.00 = First Year Investment Return 656½%.

a more detailed selection of equipment to be used on specific operations.

To justify the purchase of the proper coolant cleaning device, a savings must be shown in either labor, wheel life, increased production, improved quality, extended life of the coolant, improved sanitary conditions at the machine, or a combination of these savings. If positive filtration is used, the savings must not only justify the purchase of equipment but the fixed expense for continuous purchasing of filtering replacements. Comparative costs of cleaning equipment should be determined over a 10-year period taken as the normal life of original equipment. A method for determining whether or not the cost of coolant cleaning equipment is justified is shown at the left. In this case a comparison is made of the before and after costs of keeping the coolant clean on three centerless grinders operating on three 8-hr shifts.

In addition to those costs shown in the chart, there are many intangible benefits which can be identified only by the analysis of specific operating conditions. An example of this is the expense of a manufacturer with a gear-shaving operation. Following the shaving operation, the gear had acquired a value of $6.50. Considering a reject averaging 15 pct, the value of parts lost in one day's run of 100 = .15 x $650.00 = $97.50. All of this value was not lost, but the additional expense of making them usable amounted to a considerable sum within a year. In some cases, parts are not salvageable.



MAGNETIC clarifiers may be used for individual machines or a central system. This installation, three of a battery of six units, takes the coolant flow from more than 165 machines. Sludge is removed by conveyer belt.

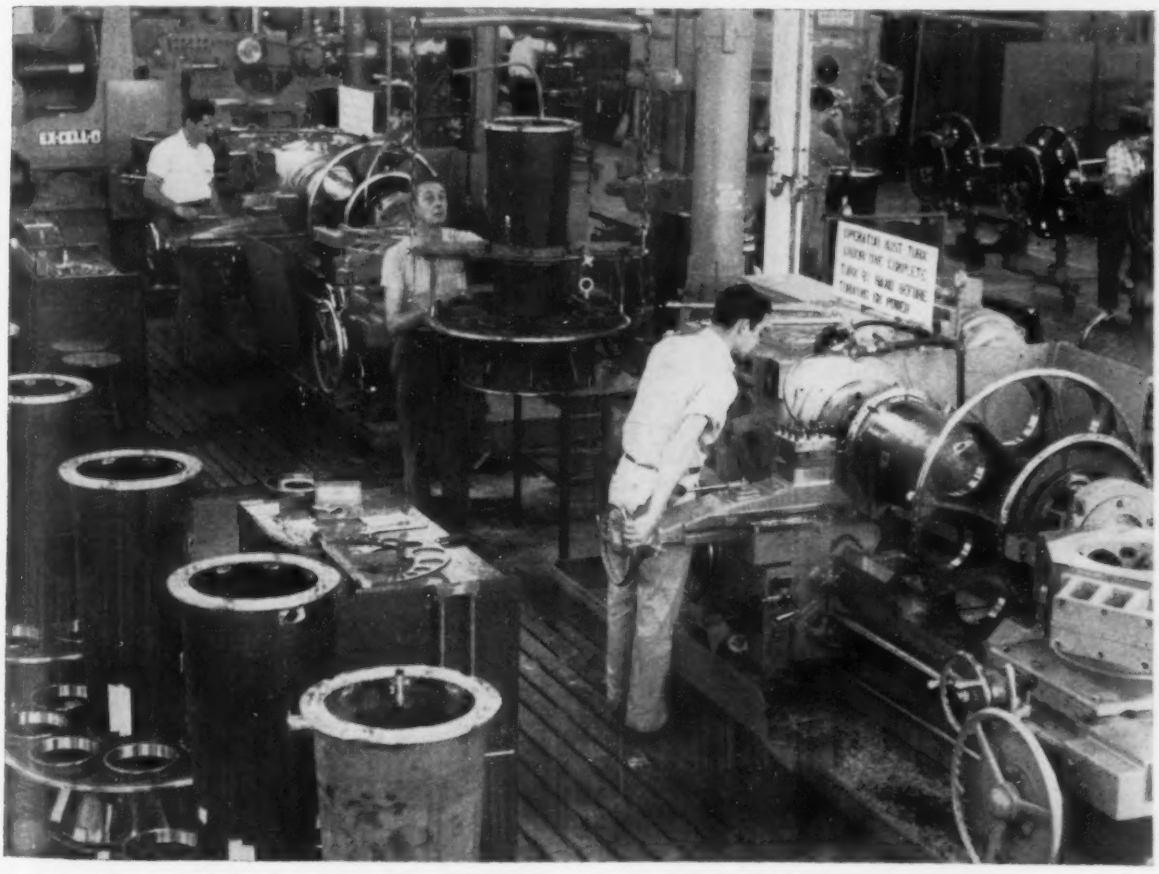
Special Tools and Fixtures Cut Machining Time

♦ AFT FRAMES for J-47 jet engines require a considerable number of machining operations because they are large, contain many mating surfaces and incorporate close dimensions. Most surfaces must be finished to a smoothness of 63 microinches. Drilled and tapped holes have to be centered within 0.010 in. of true location. Concentricity and squareness specifications demand that certain surfaces be perpendicular to others within 0.0003 in. per inch. Some diameters are held within plus or minus 0.001 in.

These precise machining operations have required Ryan Aeronautical Co. to use large, expensive machine tools. These are the most elaborate the company has ever assembled for a production project. Substantial numbers of vertical turret lathes, gap lathes, radial arm drills, boring mills, multiple drilling machines and tapping machines are employed as well as a number of single purpose tools.

To machine automatically three large flanges in one setup, a specially designed Excello boring machine is used. This 20-ton tool takes only 15 min to perform the machining operation which would otherwise require 4 hr. It consists of 3 separate heads equipped with 13 carbide tipped cutters. With the aft frames firmly clamped, the cutting heads rotate and move into the work to machine both end flanges and the interior bearing housing. Concentricity of the machined surfaces is held within 0.002 in.

Another difficult machining operation entails cutting eight combustion chamber eyelets which rim the aft-frame burner plate. These flanges require boring, turning, facing and undercutting within tolerances of 0.005 in. To do this work on boring mills would have taken 2 days per frame and tied up costly machines. Ryan devised a special boring fixture, powered by standard radial drills, which performed the work in 2 to 3 hr.



AFT FRAMES for J-47 jet engines roll down production lines. Right line of machines are Warner & Swasey gap lathes for machining both ends of aft frames in one setup. New Excello boring mill is at left rear.

New research tool—

You Can Get BETTER CASE DEPTH MEASUREMENTS

By A. D. Kirshenbaum
Project Supervisor

H. C. Boynton
Consulting Metallurgist
Research Institute
of Temple University
Philadelphia

◆ You can get more accurate measurements of carbon penetration in case-hardened steels with a new technique . . . This autoradiographic method uses carbon-14 and X-ray film.

◆ Radioactive carbon-14 is chemically like the normal carbon-12 . . . Mixed together, the two behave the same but the carbon-14 beta rays signal location of carbon in the steel.

◆ Held in contact with X-ray film, the radiations produce a picture pattern of carbon distribution . . . This new research tool has many possible uses.

◆ RADIOACTIVE ISOTOPES such as carbon-14 and cobalt-60 are now being used to measure the *depth* of carbon absorption in a case-hardened steel. This new technique, autoradiography, makes use of the fact that radioactivity affects a photographic emulsion, producing a blackening of the film.

Carbon-14 and cobalt-60 are for all practical purposes identical chemically with normally occurring isotopes carbon-12 and cobalt-59 except that carbon-14 and cobalt-60 are radioactive. By adding a minute quantity of radioactive carbon to the regular stable isotope, a homogenous mixture is obtained. The radioactive isotope acts as a tracer or visible indicator of the carbon's behavior.

Detection of radioactivity[1, 2, 3] in steel with a Geiger counter indicates the carburization but does not show the depth of the carbon absorption. By using the autoradiographic technique on the radioactivity case-hardened steel, depth of carburization can be measured. Making use of this technique, a trace of radioactive carbon was incorporated into the carbon to be used in carburizing the steel.

After carburizing, sections of the steel were put into direct contact with X-ray film. After a suitable exposure time, the films were developed. Radiations from the radioactive carbon blackened the films, producing pattern pictures of the carbon distribution in the carburized steel.

Sufficient radioactivity must be present in the material being studied to avoid long exposure times in making an autoradiograph. A total flux of $\cong 10^5$ beta particles per sq cm of film is necessary to produce a detectable blackening, and at least 10 to 100 times this activity is needed to produce a satisfactory image.[4, 5]

Close, direct contact is necessary between film emulsion and the material being studied. Several methods have been used to obtain close contact. Photographic printing frames have been used with excellent results. These apply a gentle, even pressure for uniform film to sample contact.

Emulsions intended for registration of X-rays will, in general, produce the most rapid response to beta radiations.[6, 7, 8] Films commonly used for beta ray autoradiographs were Kodak No-Screen, Ansco No-Screen and Ansco Superray-A X-ray films. The Super-A film had better resoluton than the No-Screen films but required longer exposure time.[9] To get a good picture in a reasonable length of time, a No-Screen film was used. The films used were developed with Kodak D-19 and fixed with Kodak X-ray fixer.

Apparatus used to prepare the radioactive carbon is shown in Fig. 1. In preparing the material, 8.72 g of Columbia-activated carbon, grade CXA, 14 to 28 mesh, were put into a quartz tube (3) and degassed by heating at 1650° to 1750°F for 4 hr while pumping off all adsorbed gases. Then 2.02 mg (21.4 microcuries*) of radioactive barium carbonate, $BaC^{14}O_3$, (isotopic ratio = 2.99 pct, concentration = 10.6 microcuries per mg) were put into decomposition tube A. Air

* A microcurie is 3.7 x 10^4 disintegrations per sec.

FIG. 2—Carbon penetration, not noticeable in photomicrograph, right, is easily spotted in autoradiograph, left, at 6.85X. Photomicrograph is 100X. Sample of 1020 steel was held at 1750°F for 3 hr.

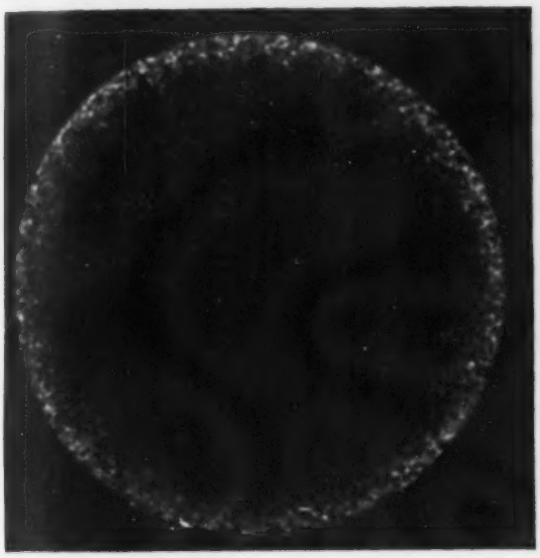


FIG. 3—Carburizing time on this sample was 2 hr at 1750°F. Note penetration in autoradiograph, left, at 6.85X contrasted with photomicrograph, right, at 100X in the carburized-steel sample.

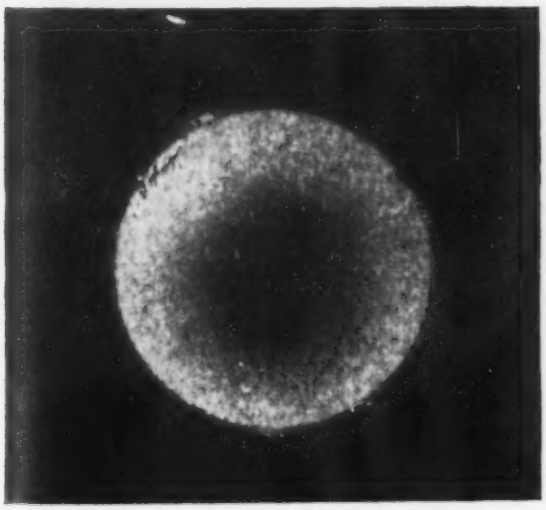


FIG. 4—Penetration is easily spotted in autoradiograph, left, at 3.5X. Photomicrograph, right, 4X shows samples held 18 hr at 1800°F to 1900°F in a 50-50 mixture of radioactive-activated charcoal and Carbo.

was exhausted from the tube and the material decomposed by adding dropwise 4 ml of 40 pct phosphoric acid. The liberated radioactive carbon dioxide, $C^{14}O_2$, was condensed in trap 2, cooled with liquid nitrogen, after first passing through trap 1, and cooled with dry ice to remove any water present.

The radioactive carbon dioxide was then distilled into the quartz tube (3) containing the degassed carbon. The radioactive carbon dioxide and the charcoal were heated 7 hr at 1750°F.

$$nC + C^{14}O_2 \overset{\triangle}{\rightleftarrows} (n-1)\,C^{14} + 2CO$$

A large quantity of carbon, 8.7 g, was compared to the amount of carbon 0.12 mg, in the radioactive carbon dioxide. The carbon monoxide formed thus had only infinitesimal amounts of radioactivity, the radioactivity being in the charcoal. The radioactivity of the charcoal, as determined by an El-Tronics Geiger counter and scaler, was equal to 2.46 microcuries per mg carbon or 21.45 microcuries for 8.72 g carbon.

Three experiments were made on the carburization of 1020 steel with radioactive carbon. They were:

1. Carburization of 1020 steel with radioactive-activated charcoal for 3 hr at 1750°F.

2. Carburization of 1020 steel with a 50-50 mixture of radioactive-activated charcoal and a standard pellet form, Carbo, of carburizing compound containing about 90 to 95 pct wood charcoal and 5 to 10 pct barium carbonate. Furnace time was 2 hr at 1750°F.

3. Carburization of 1020 steel with a 50-50 mixture of radioactive-activated charcoal and Carbo for 18 hr at 1800° to 1900°F.

A more sensitive technique

The steel was carburized by surrounding the metal test pieces with either the radioactive charcoal or the 50-50 carburizing compound mixture in an iron vessel and heating to the temperatures and for the times noted above. After each carburization, two cross-sections of the steel bars were cut and polished. One section was then placed in contact with the X-ray film for 7 days, while the other was etched and photomicrographed.

Autoradiographs and photomicrographs for experiments 1, 2, and 3 are compared in Figs. 2, 3 and 4. The autoradiographic technique is more sensitive for determining depth of carburization. In Fig. 3 the autoradiograph shows a thin layer of penetration although photomicrographs show no carburization event at a magnification of 1000X. The autoradiograph, however, does show a little carbon absorption even at zero magnification. This is noted again in Fig. 4 where the autoradiograph shows uniform carburization penetrating two thirds of the sample. Penetration does not appear uniform.

Both photomicrographs and data indicate the autoradiograph method provides a simple, supersensitive tool for metallurgical studies. No elaborate precision instruments or long, costly procedures are involved in the autoradiographic method.

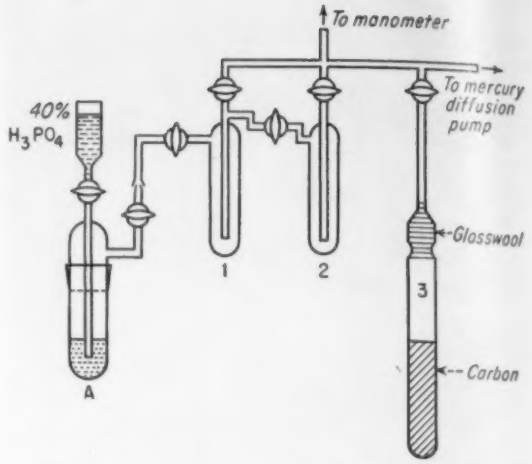


FIG. 1—To prepare radioactive charcoal, activated carbon is degassed in quartz tube (3) by heating to 1650° to 1750°F. Radioactive barium carbonate (tube A) is decomposed by adding phosphoric acid. Product is radioactive carbon dioxide which is heated with charcoal to obtain radioactive carbon in useable form.

THESE COULD BE STUDIED

1—How alpha iron changes to the gamma state, and vice versa.

2—How martensite transforms through bainite, troostite and sorbite to pearlite.

3—What happens to carbon during fusion welding, both in the weld and the parent metal.

4—Study of carbon distribution in powder metal parts.

5—In ceramic coatings on metals, some of which have to be practically carbon free, the method could spot traces of carbon absorption when other methods fail.

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Fair shake—

Good Handling *SPEEDS HEAT TREATING* of Small Parts

By Herbert Chase
Consultant
Forest Hills, N. Y.

♦ Good materials-handling methods have eliminated most of the problems, and much manual labor, in heat treatment of 1300 different cold-headed parts at Ford's River Rouge plant.

♦ Novel handling units include a hoist and roll-over for handling batches of parts in barrels, a vibrator-actuated feed trough for moving parts to the furnace conveyer . . . A step conveyer removes parts from the quench.

♦ Up to 3200 lb of small parts per hr can be handled in the controlled-atmosphere continuous furnaces.

♦ BELT-CONVEYERS and a novel feeding device have taken the guesswork and most of the manual labor out of heat treatment of some 1300 small cold-headed parts at Ford Motor Co.'s River Rouge Plant.

The cold-heading setup is big. There are about 125 cold-heading machines, 26 Boltmakers and much supplementary equipment. Output of bolts and screws ranging from 0.085 to 1 1/16 in. in diam is prodigious. In addition, many special parts can be advantageously made by heading and secondary operations. In spite of the size of the operation, the units used to keep parts moving are relatively simple.

To handle heat treating of the many small parts, Ford recently installed a battery of new continuous furnaces. They operate automatically and require almost no manual labor except

MR. CHASE, engineer and former industrial magazine editor, is widely known in the metalworking industry for his articles on new industrial developments.

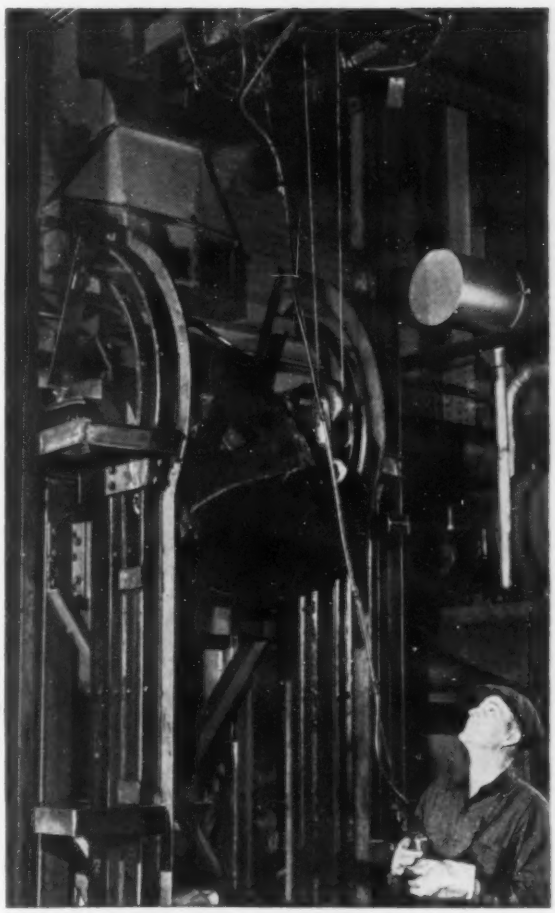


FIG. 1—Electric hoist and tilting device load barrels of parts into hopper to feed hardening furnace.

Good use of handling equipment makes it easy to keep batches of parts separate in processing . . .

that needed to see that parts are supplied to the feeding hopper as required. Even this is little more than a push button operation.

Plans call for some changes in bulk handling from machines to the furnace-loading hopper but,

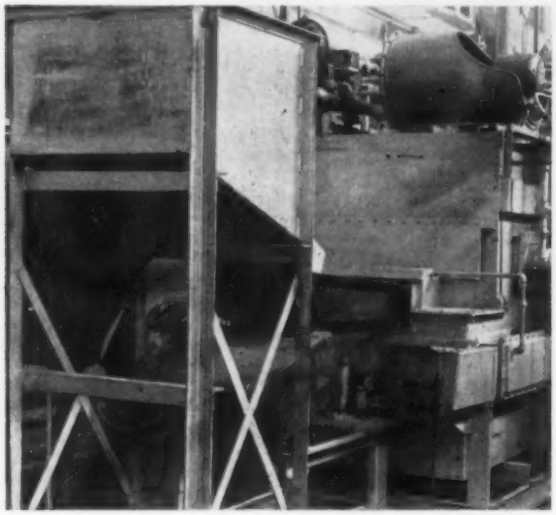


FIG. 2—From hopper, upper left, parts drop into trough and are pushed by vibrator onto furnace belt. Vibrator's shaking action causes parts to move ahead.

FIG. 4—Headed parts are lifted from the quench tank below the floor by step conveyer. Drained parts are delivered by conveyer belt to a washing machine.

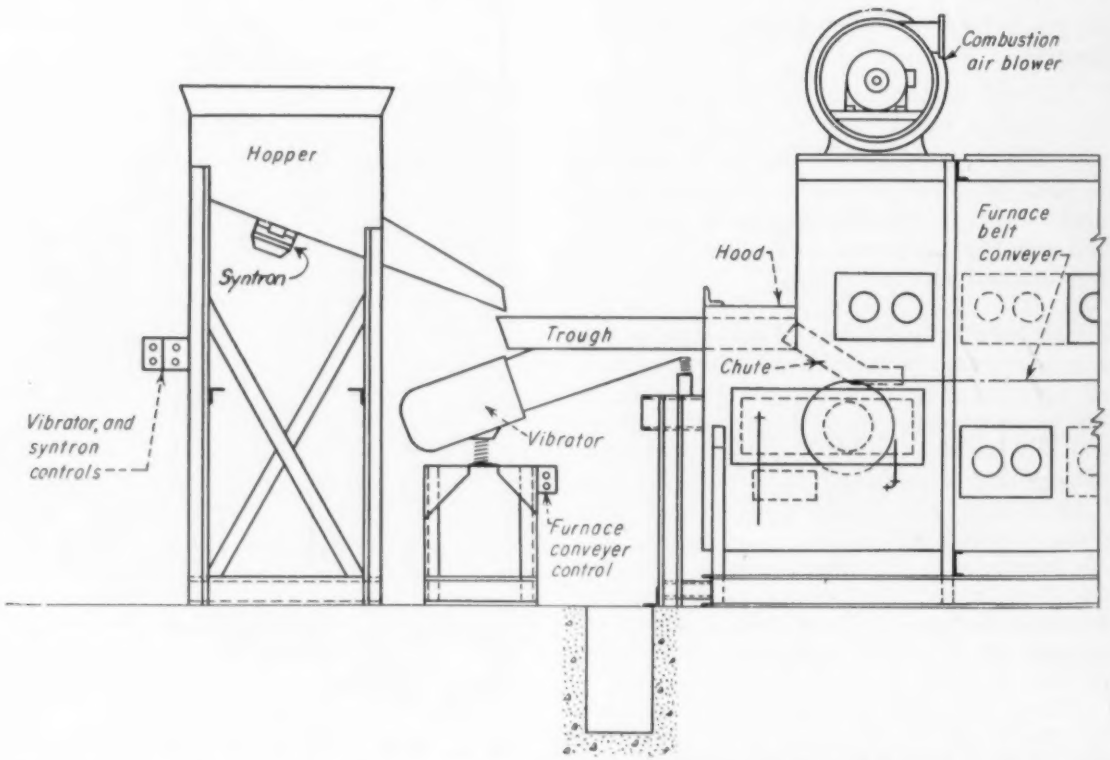


FIG. 3—Diagram shows hopper and vibrating trough for feeding parts onto conveyor of controlled atmosphere furnace. Parts discharge (not shown) from furnace to quench below oil level to avoid contact with air.

at present, parts arrive at the heat-treating setup in metal barrels on fork trucks. Barrels are placed in a holder below the electric hoist, Fig. 1, then raised for tilt dumping into the furnace-feeding hopper. Parts feed into a trough, Figs. 2 and 3. A Syntron vibrator attached to the trough moves parts through the trough and down a chute onto the continuous wire belt of the hardening furnace. This electric vibrator produces a shaking action that causes parts fed from the hopper to advance and fall on the belt. Adjustment of the feeding rate can be made by a timer in the vibrator circuit.

The timer can be set to turn alternately on and off for a given number of seconds. The on-off cycle continues until the setting is changed. If the size and weight of parts does not change greatly, the setting can remain unchanged. If size and weight change enough to affect considerably the number of pounds of metal fed into the furnace per minute, the setting of the timer can be adjusted to give the desired rate.

Heating is done in a radiant-tube type furnace made by Industrial Heating Equipment Co. A controlled nonoxidizing atmosphere is supplied by an endothermal generator. Gas under thermostatic control is used as a heat source. Parts passing through the furnace attain a temperature of 1570°F before they are discharged into the quench. This discharge is below oil level, so that air is excluded and no scale is formed. The quench tank is below floor level, Fig. 3.

Quench oil is rapidly circulated and constantly cooled to keep it at uniform temperature. Quenched parts feed onto a step conveyer, Fig. 4. As they rise, a step at a time, most of the surface oil drains off and returns to the tank below. This conveyer discharges parts onto the wire belt of a washer. Here parts are spray-washed in a hot alkaline cleaner. Heat is sufficient to substantially dry the parts before they drop from the washer belt onto a similar woven wire belt that carries them through the draw furnace.

In the draw furnace, also made by Industrial Heating Equipment Co., parts are heated to about 900°F. This temperature is not sufficient to produce oxidation and atmospheric control is not needed. Heating is by gas, and combustion products are recirculated for fuel economy. Parts remain in the furnace about 90 min and are discharged into barrels, Fig. 5, at the end of the furnace. Barrels are on a gravity-roller conveyer for easy handling.

Parts and batches of the same part are not mixed. Each batch is allowed to feed through the Syntron feeder before a new batch is dumped into the hopper. Each batch remains separate in the furnace and is discharged separately from the furnace. There is no mixing at discharge. Barrels are shifted as soon as one batch is finished or before the next one starts to discharge.

The three belt conveyers and the step conveyer are synchronized to handle parts at the same rates. Feeding by the Syntron is adjusted to suit the load capacity of the furnaces and also to spread the parts with substantial uniformity across the furnace belt. Subsequent handling in the setup retains the same dispersion of the parts so that they are uniformly heated and uniform hardness is attained.

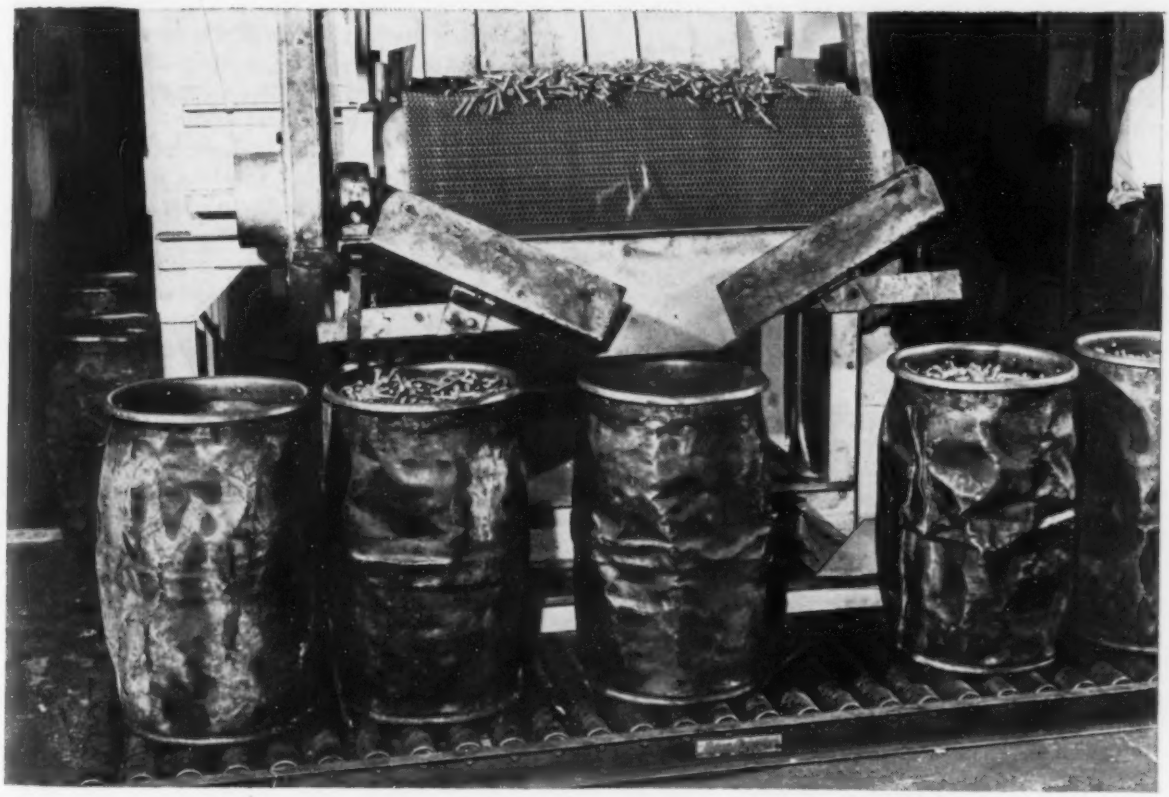


FIG. 5—Heat-treated parts drop into tote barrels from belt of continuous draw furnace.

More care, longer wear—

How to Increase the

By Frederico Strasser
Consultant
Santiago, Chile

◆ To increase the life of cutting dies all of the factors which determine die life must be studied . . . Many of these are variable . . . Tool design is important . . . Simple, regular cutting shapes wear longer.

◆ Die plate thickness must allow for the required number of sharpenings without becoming too weak . . . Tool life can be increased two or three times by changing to a more expensive steel grade . . . Proper lubrication is helpful in extending die life.

◆ GOOD TOOL DESIGN takes into consideration the cost of the tool in relation to its tool life. In the case of a cutting die, tool life is given in the total number of acceptable stampings produced with the die.

The life of a cutting die depends on many factors, most of them variable and unpredictable. To increase cutting die life, it is necessary to study the factors which determine die life in an effort to find methods for best controlling them.

The factors which influence die life are shown in the box on p. 146. Following them in order, it can be seen that a cutting die will last longer with softer stock and lighter gage metal. The shape of the cutting contour also influences die life. Simple, regular cutting shapes wear longer while sharp corners, sharp points and narrow slots, as shown in Fig. 1, wear more rapidly and reduce tool life considerably.

Tool design factors which bear a direct relation to die life include: Angular clearance of the die opening, punch clearance, die plate thickness and die plate construction. Fig. 2 shows how the angular clearance of the die opening affects tool life. As the clearance angle A becomes greater, the cutting angle B becomes smaller and the cutting edges wear more quickly. A punch clearance equal to the half difference between the size of the punch and the die opening, see Fig. 3, is necessary for lowering the cutting pressure. If the punch clearance is too small the pressure becomes unnecessarily high, if too large, burrs form on the blanks. Both cases materially reduce die life. Die plate thickness must allow for the required number of sharpenings without becoming too thin and consequently too weak, see Fig. 4. Solid die plate construction is recommended for small and medium sized, regularly shaped blanks on high production runs. Sectional die plate construction is used for large, irregularly shaped blanks of comparatively small runs. Despite numerous advantages sectional dies wear more rapidly than solid dies. Compound dies wear less than ordinary blanking dies and 20 to 30 pct more life can be expected from them.

Within reasonable limits, the higher the carbon and alloying content in a steel, the greater will be the productive life of a cutting member of a die. Tool life can be increased two or three times by changing to a more expensive grade of steel at a slight additional cost. Cemented carbide dies cut 30 to 40 times as many blanks or holes between grinds as the best grade of high-speed steel dies. Since their cost is only 3 to 4 times that of conventional steel dies, very large savings can be made. They are used to best advantage on long production runs. If cutting dies are not properly heat treated, the cutting edges become dull prematurely and tool life is decreased.

In die construction there are several factors which bear direct relation to tool life. These include: Alignment of the cutting members, punch penetration, location of tool-shank, and die-set. For best results, the cutting faces of a die should be held perfectly parallel to each other during the cutting action. Even a slight misalignment, see Fig. 5, produces a metal-to-metal contact with severe damage to the cutting edges and lower tool life. Punch clearance must be distributed uniformly around the whole cutting contour. Uneven distribution of the punch clearance, see Fig. 6, results in a quick dulling of the cutting edges and the formation of burrs on the workpieces. The penetration percentage

MR. STRASSER, Budapest-born engineer, has written hundreds of technical articles which have been published in 9 languages and 13 countries. He is presently in charge of tool design for a Chilean concern which manufactures electrical and plastic components.

Life of Cutting Dies

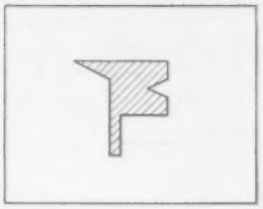


FIG. 1—Simple cutting shapes wear longer while sharp cornered dies, shown at right, reduce tool life.

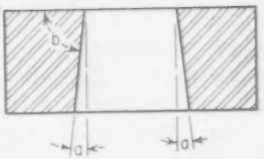


FIG. 2—As the clearance angle (a) increases, the cutting angle (b) decreases and cutting edges wear faster.

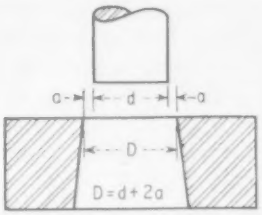


FIG. 3—To lower cutting pressure—punch clearance should be half the difference between the size of the punch and the die opening.

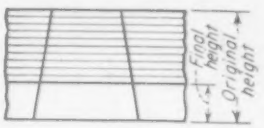


FIG. 4—Die plate thickness must allow for the required sharpening without becoming too thin and consequently too weak.

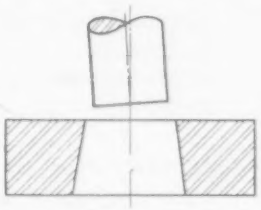


FIG. 5—Misalignment of die and the punch will produce a metal-to-metal contact resulting in die damage.

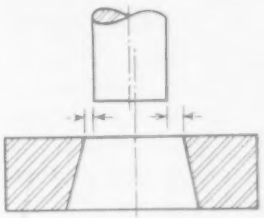


FIG. 6—Uneven distribution of the punch clearance, shown in drawing, will lead to burr formation.

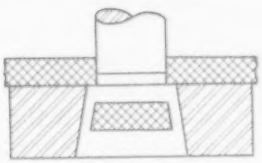


FIG. 7—Punch penetration varies with stock thickness. The thicker the metal, the less penetration is needed.

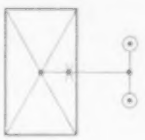


FIG. 8—For best tool life the tool shank axis must lie in the exact center of all cutting edges.

of the punch varies with the stock thickness from 25 to 87 pct of the stock thickness. The thicker the metal, the less penetration is needed, see Fig. 7. If the tool is properly built and set in the press so that metal-to-metal contact between punch and die plate is avoided, die life is increased considerably.

For best results the shank axis of the tool must lay in the exact center of cut of all the cutting edges of the tool, see Fig. 8. This causes no undue flexural stresses on the cutting members, which otherwise would decrease the useful life of the tool. Precision die sets assure better performance than commercial die sets and therefore are preferred for high production tools which must have a long life.

With open type dies, good press maintainance is of extreme importance. Almost every press at the instant of cutting impact deflects causing a slight misalignment of the punch. If this deflection is small no harm is done. If the deflection is too much, the misalignment becomes so great that there is metal-to-metal contact between punch and die plant and the tool life is decreased.

To reduce press-frame deflection the following should be considered: The nearer the actual cutting pressure to nominal capacity of the press, the greater the deflection becomes. A steel frame is stiffer than a cast iron one. A straight sided press is stiffer than a C-type, open one. Ram movement without unnecessary play is most important for open-type construction dies. Alignment and even distribution of punch clearance depends on proper ram movement.

Proper lubrication of the metal to be stamped is a great help in prolonging tool life. The lubricant should be selected, in each case, according to the kind of stock, its condition, hardness, the kind of operation, etc. The moving members of

"Bushings and guide posts of the die sets should be oiled constantly to avoid galling . . ."

the tool must also be properly lubricated just like any moving part of a machine. The bushings and guide posts of the die sets should be oiled constantly to avoid galling.

Dulling of the cutting edges is shown by the formation of burrs on the workpieces. The size and height of these burrs indicate when it is time for resharpening the tool. Since burrs up to about 0.001 in. can be still eliminated by tumbling, tools should be resharpened when burrs reach this size. The amount of metal to be ground from the cutting surfaces depends on how badly dulled the cutting edges are. In exceptionally good cases, 0.005 in. per grind is enough but an average 0.010 to 0.015 in. is removed for each resharpening. The amount of die height which may be ground off for successive resharpenings is arbitrary within reasonable limits. It is not unusual for high production tools to start with a die plate over 1 in. thick which is reduced by grinding to ⅜ in. or less.

DIE LIFE FACTORS

1—Kind, hardness and thickness of stock to be cut.
2—Size and shape of blanks.
3—Tool design: (a) angular clearance of die opening; (b) punch clearance; (c) die plate thickness; and (d) die plate construction.
4—Steel quality of cutting members.
5—Heat treatment of cutting members.
6—Tool setting.
7—Press selection.
8—Stock and tool lubrication.

NEW BOOKS

"Analysis of Aluminum Alloys," by G. H. Osborn and W. Stross. A survey of analytical methods, including new, standard and modifications of standard procedures. Methods range from those requiring modern physicochemical instruments, such as polarograph and photometer, to those which may be carried out with normal laboratory equipment. Methods for the determination of less common elements such as beryllium, bismuth, calcium, silver, and sodium are described. Chemical Publishing Co., Inc., 212 Fifth Ave., New York 10. $3.50. 144 p.

"Stahldraht," by A. Pomp. Reviewed by W. Trinks, Professor Emeritus, Carnegie Institute of Technology. Starts with the wire rod, as it comes from the mill, and discusses the effects of imperfections in the rod upon the quality of the finished wire. Describes and illustrates all stages of wiremaking and testing. Also includes complete descriptions of pickling, hardening, straightening, polishing and coating operations. Manufacture of wire goods (fencing, etc.), is not described. Verlag Stahleisen, Dusseldorf, Germany. $9.50. 335 p.

"A Glossary of Terms Used in Methods, Time Study, and Wage Incentives." Compiled by a broad cross-section of cooperating management, industrial engineering and personnel leaders, this glossary may be of major importance in eliminating hair-splitting in interpretation of labor contract terms. Some 332 terms and expressions are defined on the basis of their interpretation by the greatest number of experienced people using them professionally and successfully. The Society For Advancement of Management, 411 Fifth Ave., New York 16. $1.00.

"Nationalization In Practice: The British Coal Industry," by William Warren Haynes. The author drew heavily on first hand experience gained in the mines and mining regions, on published materials, and on personal discussions with mining industry management. The result is an authoritative and comprehensive study of the British coal industry written from an administrative viewpoint. The study focuses attention on the complex administrative problems involved in nationalization of the industry. Conclusions: Nationalization is not the utopia sought in advance, but has helped increase coal production. Div. of Research, Harvard Business School, Soldiers Field, Boston 63, Mass. $4.00. 413 p.

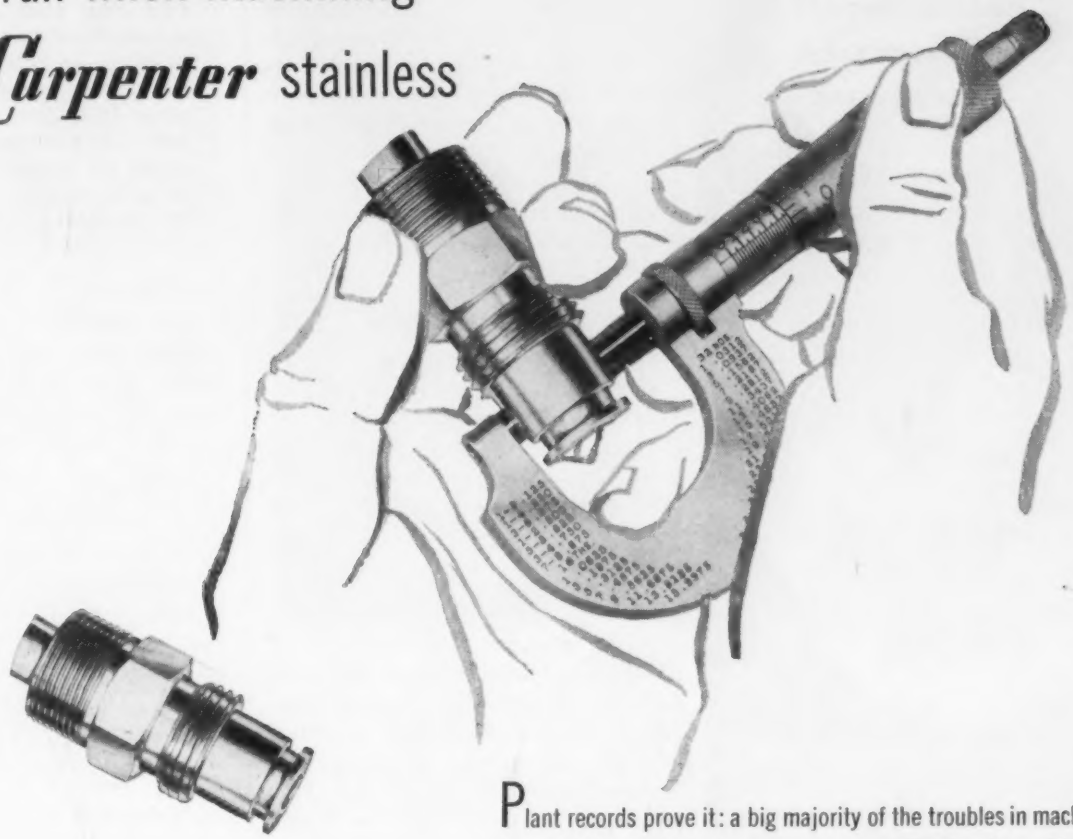
"One Hundred and Fifty Questions for a Prospective Manufacturer," by William M. Hood. The author, associate professor of Small Business, University of Michigan, prepared the booklet in cooperation with the Small Defense Plants Administration. The questions cover a wide range of factors affecting manufacturing operations. Superintendent of Documents, Washington 25, D. C. 20¢.

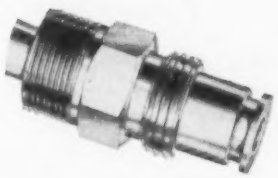
"World Production of Raw Materials." Brings to more recent date figures on world production of a variety of raw materials. The Royal Institute of International Affairs, 542 Fifth Ave., New York 36. $1.50. 104 p.

You get a far higher number of **good ones**

on each run when machining

Carpenter stainless





Rejects on this needle valve part dropped 30% when the company changed to Carpenter No. 8, Type 303.

Plant records prove it: a big majority of the troubles in machining stainless parts just aren't necessary! That's why we'd like to show you what can happen when you change from a run-of-the-mill free-machining stainless to a Carpenter Free-Machining grade. Records prove that on many jobs, rejects take a nosedive, tool life goes up, and costs down. That's because Carpenter Stainless is made in a specialty tool steel mill to highest tool steel quality standards. The same careful controls are applied to make sure every bar of Carpenter Stainless will work the same. It stands to reason that with Stainless like this you can get more good parts out of the lot. Isn't it worth a try? Just specify "Carpenter" on your next production order. The Carpenter Steel Company, 121 W. Bern St., Reading, Pa.

Export Department: The Carpenter Steel Co., Port Washington, N. Y.—"CARSTEELCO"

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Technical Briefs

POWER:

Waste heat from copper furnace drives steam power generator.

Plans to recover vital copper in one of the richest undeveloped deposits on the North American continent called for a specially designed boiler to utilize what would otherwise be waste heat from a copper reverberatory furnace. The boiler, designed and being built by the Babcock & Wilcox Co., will supply steam to a turbo-generator to furnish power.

Scene of this spectacular operation is the White Pine copper smelter 18 miles southwest of Ontonagon, Mich. Explorations conducted over the past 15 years by the Copper Range Co. of Boston determined there is a sufficient ore body to produce copper for the next 50 years.

Copper On Tap

The company, at request of DMPA and assisted by an RFC loan of $57 million, is currently constructing the necessary facilities to recover, process and ship fire-refined copper from the site. This work is being done by the White Pine Copper Co., a wholly owned subsidiary of Copper Range.

The ore mineral is mainly chalcocite, a cuprous sulfide (Cu_2S). The total ore reserves amount to 309 million tons averaging 21.3 lb of copper per ton.

Boiler of Special Design

The boiler, which will be about six stories high, is to be in line with and following the reverberatory furnace in which the copper ore is melted.

Gases or products of combustion, laden with slag particles and dust, leave the reverberatory furnace at a rate of approximately 143,000 lb per hour at a temperature of 2600°F. First they enter the waste heat boiler furnace, then, passing through the superheater and convection section of the boiler.

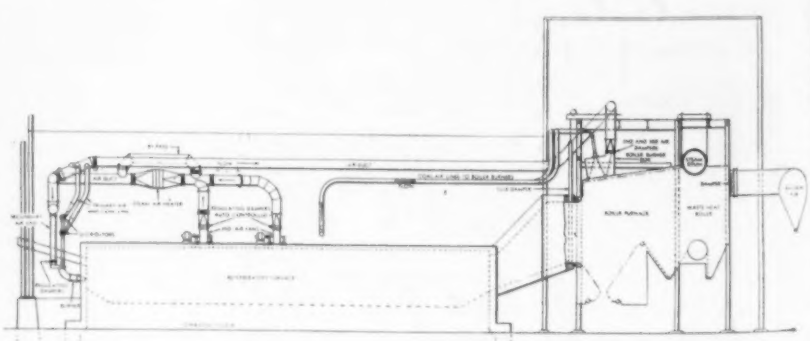
Hot, slag particles will fuse on any surface with which they come in contact, especially if the surface is hot. To cope with this problem the waste heat boiler was specially designed with tube-to-tube water-cooled wall radiation chamber, widely spaced platten-filled chamber and superheater chamber, and a cross-flow convection boiler section.

Slag Cooled Off

The heat absorption of the water-cooled furnace walls and the water-cooled plattens reduces the temperature of the incoming gases 400° to 500°F before they enter the superheater chamber. Suspended slag particles are cooled to a dry ash which drops to the furnace

IF YOU WANT MORE DATA

You may secure additional information on any item briefed in this section by using the reply card on page 103. Just indicate the subject heading and the page on which it appears. Be sure to note exactly the information wanted.



PULVERIZED COAL can be used to fire the boiler when "waste heat" from the reverberatory furnace at the White Pine copper smelter, Ontonagon, Mich., is not available. Sketch above shows general layout of equipment for pulverized coal firing of furnace and boiler. Boiler recovers about 50 pct of heat in fuel supplied.

hopper and into the hoppers under the boiler from which it is returned to the reverberatory furnace for retreatment to reclaim the copper.

The parallel, instead of the usual staggered, tube arrangement makes cleaning more effective. This is accomplished by automatic telescopic soot blowers, located in lanes between the plattens, superheater and boiler convection sections, periodically blowing high pressure steam through nozzles across the boiler.

No Hand Lancing

This arrangement prevents slag accretion on tubes which would otherwise require slow and expensive hand lancing. Aside from the considerable time and expense saved, this arrangement insures continuous operation of the boiler.

To minimize draft loss and insure against sulfurous gases leaking into the boiler from where men work, there will be a single-pass horizontal cross gas flow arrangement from the reverberatory furnace outlet through the waste heat boiler and to the balloon flue inlet.

Valuable "Waste Heat"

Using this waste heat from the reverberatory furnace instead of fuel for the generation of steam, the waste heat boiler recovers about 50 pct of heat in the fuel originally supplied to the reverberatory furnace.

The boiler is designed to generate steam at 885 psi at 920°F at the superheater outlet. The steam generated is used in the power plant, to preheat combustion air by means of steam air heaters, and for the copper reverberatory furnace.

At such times as the reverberatory furnace may be shut down for repairs, the boiler, by a special arrangement, can be fired with pulverized coal, thus assuring continuous full production of steam at all times.

A pulverized coal system, including distribution and burning equipment, will also be installed. There are three pulverizers, two of which will normally be used to fire the reverberatory furnace.

—Technical Briefs—

FABRICATING:

Mechanical "octopus" turns out grating at high speed.

An ingenious, automatic welding machine, recently placed in operation at the Irving Subway Grating Co., Long Island City, N. Y., has been dubbed "mechanical octopus" by plant workers. It does the work of dozens of human welders in a single stroke.

The "octopus" bears a fleeting resemblance to its namesake because of the numerous tentacle-like, water circulating tubes that extend from its body. It makes 62 simultaneous welds, or a total of 744 per min. This represents 24 sq ft of welded grating a minute.

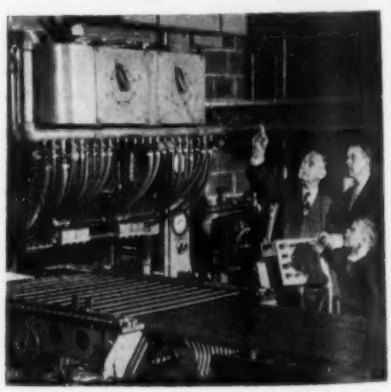
Ten Months In Making

The mammoth welder, one of the newest and most versatile of its kind, is controlled by a single operator. Two weeks of rigorous tests were applied in the Long Island City plant before it was placed in full-scale production. Ten months were spent in designing and manufacturing the machine.

The welding machine can produce enough grating in one day to completely surface the main concourse of New York's vast Grand Central Terminal.

Has Own Water Tower

During the multi-welding process, pressure for forging the bearing bars with the cross bars is



THREE GENERATIONS of the Irving family, view with pride and a bit of awe the big automatic welder installed at the Long Island City, N. Y., plant of the Irving Subway Grating Co. Left to right, Walter E., founder, James E., vice president, and Walter E., II, small boy thrilled.

equivalent to 100 tons. Welding temperature is approximately 2000° F. To generate the required heat, the welder uses enough electricity continuously to light 5000 100-watt bulbs.

The machine has its own water tower, with self-circulating system, for cooling transformers and conductors. Some 400 gpm are used. Welds can be made at desired spacing points for grating openings of different sizes by simple machine adjustments.

COAL:

New method recovers fines from washery slurries.

A new method of cleaning and dewatering coal-washery slurries to recover a clean coal product that than be coked or made into briquets has been developed by German scientists.

Washery slurry is a pasty mixture of fine coal, impurities, and water obtained in washing coarser sizes of coal.

Two Steps

The method, called the Convertol process was developed by the research staff of Deutsche-Kohlenbergbau-Leitung, the coal producers' association of western Germany.

The German process consists of two steps. First, small quantities of heavy oil are mixed with the slurry. The oil coats the tiny particles of coal, which in the second step are separated from the dirt and water in a centrifuge. The water and dirt pass through screen perforations in the centrifuge, while the oiled coal particles are retained and later discharged as a clean, low-moisture product.

Cuts Moisture

The Germans report that the coal produced by this method contains virtually no free waste material and only 8 to 10 pct surface moisture. This is an attractive feature, as present methods of treating washery slurries by mechanical means yield a product containing 20 to 25 pct moisture.

Turn Page

——Technical Briefs——

WELDING:

Unusual welding setup speeds remodeling of gondola cars.

Remodeling of 200 gondola cars was speeded up recently with an unusual welding setup at the Havelock, Neb., shops of Chicago, Burlington & Quincy R.R. Automatic Unionmelt was used in the application.

Cars were to be equipped with new nailable steel flooring which is held down by a ⅜ x 1¼ in. bar running the length of the car on each side. By means of the Unionmelt method the bars were fillet-welded to the toe of the side-sill angle and the flooring was next welded to the opposite side of the bar by a second fillet weld also running the length of the car.

On Aluminum Tracks

Two Unionmelt heads mounted on Oxweld machine carriages were used in each car for faster production, one for each side. Each machine rode on two 10-ft long fabricated aluminum tracks which were leap-frogged so that welding was continuous.

Welding speed for the ¼-in. fillet weld between the bar and floor was 22 ipm at 400 amp., 26-28 volts. For the weld between the side sill and bar, welding speed was 32 ipm. Direct current was used on both operations. Welds were made using 3/16-in. rod and Grade 90 welding composition.

ALUMINUM TRACKS were used to move welding machines in this setup at Havelock, Neb., shops of the Chicago, Burlington & Quincy R. R. Oxweld's Unionmelt apparatus is shown welding a hold-down bar to the side sill member and flooring channel surface during installation of nailable steel flooring in 200 gondola cars.

INDUSTRIAL SCULPTURE:

Stern frame and skeg flame-gouged from huge steel blocks.

Flame cutting and gouging their way through solid steel, workmen at Bethlehem Pacific's San Francisco Shipyard recently completed a stern frame and skeg for a Navy oiler in three weeks.

Forged and Flame Cut

Virtually sculptured by hand from a huge block of steel measuring 30 x 30 in. x 17 ft and weighing 20 tons, the stern frame section and skeg were forged and flame cut by expert craftsmen at Bethlehem Pacific's San Francisco Shipyard in only 3 weeks to replace one on the USNS Kennebec, a Navy oiler, which was broken as a result of heavy weather.

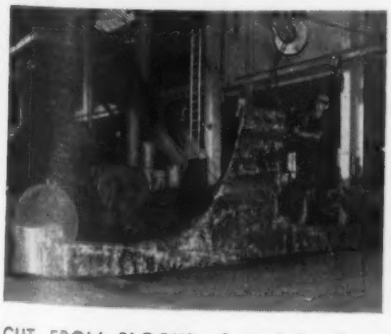
Rough Cut First

With templates provided by the Yard's mold loft, the gross outline was first flame cut from the forging by machine, then flame gouged by hand to the finished shape. This was extremely difficult due to the rapid changes in the contour of the unit.

The upper three feet of the stern frame was joined to the skeg by means of thermit welding.

Stronger Than Casting

Because of the urgent need for this section of the stern frame, the unusual method of flame cutting and gouging was used to fabricate it. This method is entirely feasible, however, and produces a frame which is stronger than one made from a casting.



CUT FROM BLOCKS of steel by flame gouging, this stern section and skeg were joined by thermit welding.

Turn Page

MANPOWER:

Greater dependence on engineers needed to offset shortages.

Western nations must place more dependence on engineers to offset the tremendous manpower differential between the Eastern and Western Worlds, A. C. Monteith, vice-president in charge of engineering at Westinghouse Electric Corp. recently told the American Institute of Electrical Engineers at Boston.

To illustrate how short the supply of engineers is today, Mr. Monteith cited a report by the Survey Committee of the Engineers Joint Council that 30,000 graduate engineers are needed each year for normal industry operation. Another 12,000 are required for defense needs. Of this total of 42,000 needed, the colleges are graduating about 21,000 this year—half of the number actually in demand.

More to Story

Although these figures summarize the shortage of engineers, they do not show altogether the seriousness of the problem. For example, industry has a backed-up demand for more than 50,000 engineers today.

Furthermore, he said, there are indications that the number of engineering graduates in future years will decline because of a number of factors in education such as the shortage of science teachers and the inadequate preparation of high school students for engineering work.

Corrective Programs

To combat the shortage, engineering societies and industry have joined together in a number of programs aimed at increasing the supply of engineers through better utilization of engineering talent, more scholarships, work-study plans and the like.

These programs are excellent, Mr. Monteith said, and should be continued because they offer immediate results. It certainly is opposed to common sense when a situation can develop where young men ignore the opportunity to do creative and satisfying work under good working conditions at a better-than-average salary.

IMPREGNATION of castings has moved ahead fast in recent years. The wide range of parts, shapes and sizes of castings which can be sealed by impregnation is illustrated above. Using an autoclave, high-vacuum pump and controlled wash tanks, casting pores are filled with impregnating resins such as Metaseal 19V5 used by American Metaseal Mfg. Corp. of New York.

MOTOR PROTECTION:

Device checks circuit breakers, helps cut industrial fires.

A device that will check circuit breakers and similar devices while they are in service promises to go a long way toward stopping motor burn-outs and industrial fires. The new instrument was recently announced by Multi-Amp Corp., Harrison, N. J., after several years of development work and testing by electrical manufacturers and public utilities.

Company president I. M. Gross explained that before development of this instrument there was no simple safe method of testing current-actuated protective devices in the field. So industry paid a heavy toll in downtime and lost production caused by overloads, short circuits and motor burnouts which often caused fires. In fact, some 20 pct of industrial fires last year were caused by electrical disturbances.

Draws Little Power

The portable unit is a loading device, adjustable in stepless increments with a knob. Except for the current consumed by the device being tested, the Multi-Amp unit draws negligible power from the line. Its job is to tell the user whether his protective devices will function at the load they are supposed to operate at.

TESTING CIRCUIT BREAKERS and similar current-actuated devices is now fast, simple and accurate with new unit. This 60-lb 1 kva tester sells for $275.00

Consumers Seek Inventory Strike-Price Hedge

Once more steel is regarded by some as better than money in the bank . . . Inventory seen hedge against possible strike, higher prices . . . Market still booms . . . Price rises general.

The odds are against a steel strike this summer, but consumers aren't betting there won't be one. They are stocking steel as if it were gold. Many of them actually seem to feel an inventory of the "precious" metal is better than money in the bank.

It isn't hard to figure out why: (1) A healthy steel inventory is the best hedge against a possible steel strike. (2) If steel prices go up (which is likely), value of inventory will be enhanced accordingly.

Will History Repeat? . . . Fresh in steel users' minds is memory of last summer's longest (54 days) and costliest (THE IRON AGE estimated over $4 billion loss) strike in the history of the steel industry. Many manufacturers had to close plants or cut production schedules because of the steel famine. The more fortunate ones saw their fat inventories melt to the bone.

This year the market setting is not too different from 1952: the wage question is coming to a head in a period of overwhelming steel demand. And business prospects are so bright that any inventory accumulated as a strike hedge can undoubtedly be worked off later in the year—in addition to bringing a nice return on the investment if steel prices are raised to cover a wage increase.

Driving Hard . . . Biggest push behind overwhelming steel demand is coming from automotive buyers. Those who thought the Detroit juggernaut would lose its power after midyear are amazed at the intensity and duration of the assembly line cry for metal.

There will be no decline in auto production or steel ordering after midnight June 30. None of the Big Three automakers has been able to place orders for the amount of steel it wants in the second half. At least one of them is known to be planning to *increase* production in the second half.

No One Wants It . . . A steel strike this summer is unlikely because both the union and management will try hard to avoid it. The steelworkers are in no mood to strike because memory of last summer's "unemployment" still leaves a bad taste in their mouths. Their record wage increase costing about 25¢ an hr has been balanced out by wages lost during the strike. They are only now ready to start operating in the black.

The steel companies have had their financial troubles, too. The 1952 strike was largely responsible for a 22.3 pct drop in profits. Since most of them had been counting heavily on earnings to finance record expansion programs, their ready cash position is not robust.

Hope for Peace . . . First quarter 1953 steel earnings were up about 22.8 pct over the same period of 1952. Current increases in extra charges and possibility of excess profits tax relief further brighten their earnings outlook. But they can not cash in on this profit potential if they are hit by a full-fledged steel strike.

On the surface it looks as though there weren't a ghost of a chance there would be a strike. But the trouble is that neither side can afford to admit at the bargaining table its inability to make or take a strike—if that is the only way they can support their position. Once the bargaining battle begins, the danger is that both sides might become so firmly entrenched they can't be budged into a compromise. The labor history of the industry makes this a telling point.

Level on Costs, Prices . . . "Hands Off" policy of the present Administration may be just the extra opportunity they need to reach a quiet and peaceful agreement. The result may be a "modest" wage increase of about 10¢ an hr and a steel price increase in the neighborhood of $4 a ton.

Increases in steel extra charges, still spreading through the industry, now affect most tonnage products, as had been predicted by THE IRON AGE. Early this week U. S. Steel Corp. raised extras on structurals and plates. Previous extra increases by steel companies had affected bars, sheets and strip, wire products, alloy products, and some semi-finished steel.

Steel Up, Scrap Down . . . U. S. Steel also followed other rail producers by raising base prices of rails and track accessories. This raised The Iron Age Finished Steel Composite Price from 4.376¢ per lb to 4.390¢ per lb, the first time this index has changed since the wage-price settlement July 26 last year.

Scrap prices continued their decline. The Iron Age Steel Scrap Composite fell 17¢ a ton to $38.66 per gross ton.

Steelmaking operations this week are scheduled at 101.0 pct.

Best way to support a home

Modern home builders are using steel more and more extensively in order to cut construction costs and make homes more liveable.

One example is the use of economical steel beams as structural supports, permitting longer spans without danger of sagging. This results in greater open areas, free of obstructions.

In many other ways steel is essential to the modern home. Steel pipe for plumbing, heating and ventilating. Steel for cabinets, hardware, casements, ornamental work, lath, studs, doors. In fact, it requires over 4 tons of steel to build the average modern 6 room home.

Through its diversified line of products, Kaiser Steel is helping to meet the needs of western builders . . . providing a nearby, dependable source for the West's great construction industry.

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Market Briefs and Bulletins

New Allotment **Procedure . . .** Coke oven construction contractors are being notified of new procedures necessary for third quarter priority for nickel-bearing stainless. Under Dir. 1 to DMS Reg 2, such orders must bear allotment symbol SS with quarterly designation 3Q53 and also the notation, "Certified under DMA Reg 2." Third quarter orders already placed bearing symbol H-7 should be revalidated by a new order carrying the SS symbol.

U. S. Steel's **Plate Extras . . .** U. S. Steel Corp.'s changes in plate extras include revision of base thickness, weight, width, and length; increases of $3 per ton in all thicknesses under ⅜ in., and a raise of $3 to $6 per ton in light gage width extras. In addition, a new extra of $3 per ton for odd gages has been established.

Inland's **Extras . . .** Inland Steel Co. last week raised extras covering cold-rolled and hot-rolled sheets an average of $4 to $5 per ton. At the same time, continuous and hot-dipped galvanized sheets prices were adjusted to the old continuous galvanized price. Base prices of rail and rail accessories were moved up $6 and $3 respectively, effective May 5.

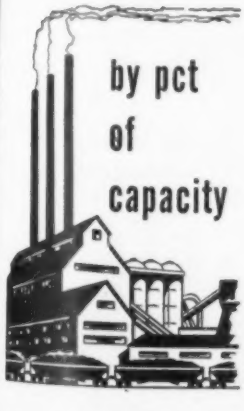
Blast **Furnace Back In . . .** Blast furnace No. 7 at Edgar Thomson Works, U. S. Steel Corp., was blown in May 8, following a shutdown since Feb. 20 for relining. This brings the plant's seven blast furnaces to full productive strength. Daily capacity of No. 7 furnace is 972 tons.

Shift from Gross to Net . . . U. S. Steel Corp. has shifted from a gross ton to a net ton basis in pricing of ferromanganese. The new price is $200 per net ton on a standard of 74-76 pct Mn, with a penalty or premium of $2 per 1 pct Mn per net ton. Old price was $228 per gross ton on a standard of 78-82 pct, with a penalty or premium of $2.80 per 1 pct Mn per gross ton. Net effect of the change is a price increase of $4.96 per gross ton for 80 pct ferromanganese. E. J. Lavino Co. also reported it was revising its ferromanganese pricing method in the same manner.

Rail Hikes . . . U. S. Steel Corp. has increased base prices of standard rails $6 per ton and rail fastenings by approximately $3, following lead of Colorado Fuel & Iron, Bethlehem, and Inland. U. S. Steel upped base price of light rails $15 per ton. Prices of wheels and axles also were increased, the wheel price change amounting to slightly more than the 5 pct pass-through allowed by Office of Price Stabilization several months ago. U. S. Steel's Export Co. has also boosted prices on rails, joint bars and tie plates.

Structural Price Changes . . . Important revisions by U. S. Steel Corp. in structural shapes extras include a switch from small size angles to larger size angles as base size. The changes are: From 3x3 in., 3x2½ in. and 3x2 in. to 9x4 in., 8x8 in. and 8x6 in. Smaller sizes now carry an extra of $10 per ton as a result of the base change. Some old extras have been eliminated and others are off $2 to $3 per ton. Standard beams are up $1 to $7 per ton, and wide flange beams range from off $1 (CB 146) to up $2.

STEEL OPERATIONS

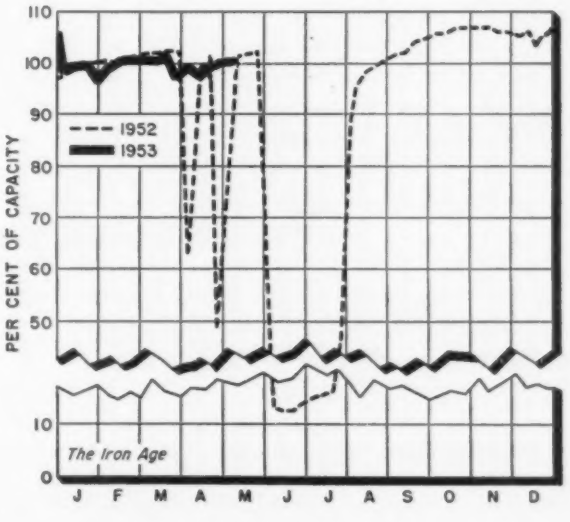


District Operating Rates

District	Week of May 9	Week of May 2
Pittsburgh	99.0	96.0*
Chicago	105.5	105.0
Philadelphia	98.0	98.0
Valley	102.0	102.0
West	107.0	107.0*
Cleveland	95.0	98.0
Buffalo	106.5	106.5
Detroit	108.0	109.0*
Birmingham (South)	102.0	101.0
Wheeling	103.0	103.0*
South Ohio River	89.5	84.5
St. Louis	92.0	92.0
East	88.0	101.0*
AGGREGATE	101.0	100.5

Beginning Jan. 1, 1953, operations are based on annual capacity of 117,522,470 net tons.

* Revised



Aluminum Output Sets New Record

March production of aluminum totaled 104,920 tons . . . First quarter total was 287,004 tons . . . Capacity still climbing . . . Strike, low prices close zinc mines—By *R. L. Hatschek.*

Score a first for the aluminum industry! March was the first month in history that the U. S. aluminum industry ever produced more than 100,000 tons—and the industry topped the old mark by a wide margin.

Production for the month was 104,920 tons as compared to the previous record of 94,050 tons set in Oct. 1943. Output of 287,004 tons for the quarter also established a new quarterly record, surpassing that of fourth quarter 1943. The March daily rate also beat the 1-month-old record with 3350 tons.

Won't Last Long . . . Aluminum capacity is still on the way up. With total projected growth aimed at better than 140,000 tons a month when all the new producers get into production, these shiny new records are slated to drop by the wayside before very long.

Here's hoping we don't have a third consecutive dry year to force curtailment of hydro power—but the industry is already an almost sure bet to top the million ton mark by a good bit this year.

Besides reporting the above figures, the Aluminum Assn. reported the industry shipped 62,971 tons of sheet and plate for the month to bring the quarterly total to 171,804 tons. Permanent mold and semi-permanent mold castings shipments (except pistons) totaled 1822 tons in March and foil shipments were 4505 tons.

Copper Firms . . . After lagging through the early part of last week, consumers came more heavily into the market for June copper on Friday. Result was a slight firming in custom smelter quotations. One, which had been selling at 29.50¢ per lb, stepped up the price to 30.00¢. Meanwhile, other custom smelters remained at 29.75¢. This moved the bottom level of the copper price range up 0.25¢.

It is also reported that not all buyers were able to fill their needs with 30¢ copper. Some had to buy 36.50¢ Chilean metal—but it seems extremely doubtful that they'll have to get 40 pct of their needs from that source.

Copper and brass scrap prices also firmed upwards a bit at most levels. Dealers now quote No. 1 copper at 21¢ to 22¢, custom smelters and ingot makers quote the same grade of metal at 22½¢ to 23½¢. Other grades were also adjusted.

Tin and Korea . . . Fluctuations of the tin market seem closely keyed to negotiations at Panmunjom. The brighter the peace prospects, the lower the tin price slips. And when truce discussions lean the wrong way, tin climbs. Of course, other military actions in the Far East are also playing an important role in the tin market.

Last week the price climbed to over $1 per lb, then it slipped back to 99¢ on Friday for prompt delivery at New York. Future delivery tin remains strong.

Close Zinc Mines . . . The zinc market plods along, taking its ups and downs in London, and remaining at 11¢ per lb f.o.b. E. St. Louis. Meanwhile, that price continues to close down marginal mines. Eagle-Picher reports it has stopped operations at four of its Oklahoma zinc-lead properties as a result of the low prices. These were not the first Eagle-Picher mines to go down.

Three Mexican mines have also been closed—not by low prices but by labor trouble. American Smelting & Refining Co. had two mines shut and American Metal Co. had one stopped by a strike.

Zinc smelter output dipped about 3000 tons in April to 80,546 tons, reports American Zinc Institute. Shipments for the month were about 9000 tons higher than March with a total of 86,156 tons. This resulted in a reduction of smelter stocks to 94,254 tons. Unfilled orders dropped from the March high of 54,524 tons to 38,722 tons, about the same level that prevailed in January and February.

May Get Foreign Metal . . . Manufacturers of non-defense products and builders may obtain foreign and used copper and aluminum in excess of second quarter allotments. This is provided in Directive 22 to CMP Reg. 1 and Directive 12 to revised CMP Reg. 6 which were issued last week.

NONFERROUS METAL PRICES

(Cents per lb, except as noted)

	May 6	May 7	May 8	May 9	May 11	May 12
Copper, electro, Conn.	29.50-30.00	29.50-30.00	29.75-30.00	29.75-30.00	29.75-30.00	29.75-30.00
Copper, Lake, delivered	....	....	....	....	....	....
Tin, Straits, New York	$1.00	$1.0075	99.00	....	96.50	96.50*
Zinc, East St. Louis	11.00	11.00	11.00	11.00	11.00	11.00
Lead, St. Louis	12.30	12.30	12.30	12.30	12.30	12.30

Note: Quotations are going prices.

*Tentative

One-Stop shopping

for brass rod and bar

You can get rod or drawn bar of Chase Free-Cutting Brass, Copper or a wide variety of other copper alloys at one stop — *the Chase Warehouse nearest you!*

When you want free-cutting materials, it pays to buy Chase — for Chase rod and drawn bar yield the shorter chips that make for *easier machining, longer tool life.* They produce smooth, clean-surfaced products — less expensive to buff or polish before lacquering, enameling or plating.

And when it comes to re-ordering, remember that Chase alloys are uniform — repeat orders of the same alloy always have the same cutting characteristics.

Chase® BRASS & COPPER

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

The Nation's Headquarters for Brass & Copper

Albany†	Cleveland	Kansas City, Mo.	New York	San Francisco
Atlanta	Dallas	Los Angeles	Philadelphia	Seattle
Baltimore	Denver†	Milwaukee	Pittsburgh	Waterbury
Boston	Detroit	Minneapolis	Providence	
Chicago	Houston	Newark	Rochester†	(† sales office only)
Cincinnati	Indianapolis	New Orleans	St. Louis	

Nonferrous Prices

(Effective May 12, 1953)

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188-in., 2S, 3S, 32.9¢; 4S, 61S-O, 34.9¢; 52S, 37.2¢; 24S-O, 24S-OAL, 35.9¢; 75S-O, 75S-OAL, 43.6¢. 0.081-in., 2S, 3S, 34.1¢; 4S, 61S-O, 36.6¢; 52S, 38.9¢; 24S-O, 24S-OAL, 37.2¢; 75S-O, 75S-OAL, 45.7¢. 0.032-in., 2S, 3S, 35.9¢; 4S, 61S-O, 40.6¢; 52S, 43.5¢; 24S-O, 24S-OAL, 45.6¢; 75S-O, 75S-OAL, 57.0¢.

Plate, ¼-in. and Heavier: 2S-F, 3S-F, 30.9¢; 4S-F, 33.0¢; 52S-F, 34.7¢; 61S-O, 33.6¢; 24S-O, 24S-OAL, 35.4¢; 75S-O, 75S-OAL, 42.3¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.4¢ to 80.3¢; 12 to 14, 37.1¢ to 97.2¢; 24 to 26, 39.7¢ to $1.27; 36 to 38, 47.0¢ to $1.86.

Rod, Rolled: 1.064-in. to 4.5-in., 2S-F, 3S-F, 41.0¢ to 36.6¢; cold-finished, 0.375-in. to 3.499-in., 2S-F, 3S-F, 44.2¢ to 38.3¢.

Screw Machine Stock: Rounds, 11S-T3, ⅛ to 11/32-in., 58.4¢ to 45.9¢; ⅜ to 1½-in., 45.3¢ to 42.6¢; 1 9/16 to 3-in., 42.0¢ to 39.3¢. Base 5000 lb.

Drawn Wire: Coiled 0.051 to 0.374-in., 2S, 43.2¢ to 31.7¢; 52S, 52.4¢ to 38.3¢; 17S-T4, 59.0¢ to 41.0¢; 61S-T4, 52.9¢ to 40.5¢.

Extruded Tubing: Rounds, 63S-T5, OD 1¼ to 2 in., 40.5¢ to 59.0¢; 2 to 4 in., 36.6¢ to 49.7¢; 4 to 6 in., 37.1¢ to 45.3¢; 6 to 9 in., 37.6¢ to 47.5¢.

Roofing Sheet: Flat, per sheet, 0.019-in., 28 x 72 in., $1.247; x 96 in., $1.662; x 120 in., $2.077; x 144 in., $2.494. Coiled sheet, per lb, 0.019 in. x 28 in., 30.8¢; 0.024 in. x 28 in., 29.3¢.

Magnesium

(F.o.b. mill, freight allowed)

Sheet and Plate: FS1-O, ¼ in., 66¢; 3/16 in., 68¢; ⅛ in., 70¢; B & S Gage 10, 71¢; 12, 75¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam ¼ to 0.311 in., 77¢; ½ to ¾ in., 60.5¢; 1¼ to 1.749 in., 56¢; 2½ to 5 in., 51.5¢. Other alloys higher. Base up to ¾ in. diam, 10,000 lb; ¾ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated; 0.10 to 0.11 lb, 3.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD, ¼ to 5/16 in., $1.43; 5/16 to ⅜ in., $1.29; ½ to ⅝ in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall; OD, ⅝ to ¾ in., 64¢; 1 to 2 in., 60¢; 3 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1½ in., 10,000 lb; 1½ to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(100,000 lb base, f.o.b. mill)

Commercially pure and alloy grades; Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	86½	67½	92½
Strip, CR	92½	70½	98½
Rod, bar	82½	65½	88½
Angles, HR	82½	65½	88½
Plate, HR	84½	66½	90½
Seamless Tube	115½	100½	137½
Shot, blocks		57	

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	48.51		50.58
Copper, h-r	50.48	46.83	
Copper, drawn		48.08	
Low brass	45.99	45.68	
Yellow brass	42.87	42.56	
Red brass	47.11	46.80	
Naval brass	47.01	41.07	42.33
Leaded brass			39.95
Com. bronze	48.76	48.45	
Mang. bronze	50.73	44.62	46.18
Phos. bronze	70.50	70.75	
Muntz metal	44.91	40.47	41.72
Ni silver, 10 pct	56.56	59.83	62.89

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	20.50
Aluminum pig	19.50
Antimony, American, Laredo, Tex.	34.50
Beryllium copper, per lb conta'd Be.	$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be	$72.75
Bismuth, ton lots	$2.25
Cadmium, del'd	$2.00
Cobalt, 97-99% (per lb)	$2.40 to $2.47
Copper, electro, Conn. Valley	29.50 to 30.00
Copper, Lake, delivered	
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$175 to $185
Lead, St. Louis	12.30
Lead, New York	12.50
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb.	27.00
Magnesium, sticks, 100 to 500 lb.	45.00 to 47.00
Mercury, dollars per 76-lb. flask, f.o.b. New York	$195 to $197
Nickel electro, f.o.b. N. Y. warehouse	63.08
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	56.25
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$90 to $93
Silver, New York, cents per oz.	85.25
Tin, New York	96.50
Titanium, sponge	$5.00
Zinc, East St. Louis	11.00
Zinc, New York	11.83
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot	
No. 115	26.00
No. 120	25.00
No. 123	24.00
80-10-10 ingot	
No. 305	30.00
No. 315	28.00
88-10-2 ingot	
No. 210	38.25
No. 215	34.75
No. 245	30.25
Yellow ingot	
No. 405	21.25
Manganese bronze	
No. 421	26.50

Aluminum Ingot

(Cents per lb del'd., 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	24.50-26.00
0.60 copper, max.	24.25-25.50
Piston alloys (No. 122 type)	22.50-24.00
No. 12 alum. (No. 2 grade)	22.00-22.50
108 alloy	22.50-23.50
195 alloy	22.75-24.00
13 alloy (0.60 copper max.)	24.25-24.75
ASX-679	22.50-23.50

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	23.00-26.00
Grade 2—92-95%	22.50-24.50
Grade 3—90-92%	22.00-23.50
Grade 4—85-90%	20.50-23.00

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	45.14
Electrodeposited	37.98
Flat rolled	45.64
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	79.50
Roller, depolarized	80.50
Cadmium	$2.15
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	94⅛

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	30.00
Nickel chloride, 375 lb drum	38.00
Silver cyanide, 100 oz lots, per oz.	75½
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	47.7

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over.)

	Heavy	Turnings
Copper	28⅝	27⅛
Yellow brass	21⅝	19⅝
Red brass	25⅛	24⅝
Comm. bronze	26⅛	25⅝
Mang. bronze	20	19¼
Brass rod ends	19¾	

Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	22½—23½
No. 2 copper wire	21 —22
Light copper	20 —20½
*Refinery brass	19½—20

* Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	22½—23½
No. 2 copper wire	21 —22
Light copper	19½—20½
No. 1 composition	18
No. 1 comp. turnings	17½
Rolled brass	14
Brass pipe	15
Radiators	14

Aluminum

Mixed old cast	12¾—13½
Mixed new clips	13 —15
Mixed turnings, dry	12½—14
Pots and pans	12¾—13½

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	21 —22
No. 2 heavy copper and wire	19 —20
Light copper	17½—18½
New type shell cuttings	17½—18½
Auto radiators (unsweated)	13
No. 1 composition	16½—17
No. 1 composition turnings	16 —16½
Unlined red car boxes	15 —16
Cocks and faucets	15
Mixed heavy yellow brass	11½
Old rolled brass	14
Brass pipe	16
New soft brass clippings	16½—17½
Brass rod ends	16 —16½
No. 1 brass rod turnings	15 —16

Aluminum

Alum. pistons and struts	5 —5½
Aluminum crankcases	8
2S aluminum clippings	11½—12
Old sheet and utensils	8
Borings and turnings	5½
Misc. cast aluminum	8
Dural clips (24S)	9

Zinc

New zinc clippings	5½
Old zinc	4½
Zinc routings	3½
Old die cast scrap	3½

Nickel and Monel

Pure nickel clippings	100
Clean nickel turnings	60 —70
Nickel anodes	100
Nickel rod ends	100
New Monel clippings	33 —35
Clean Monel turnings	25
Old sheet Monel	30 —32
Nickel silver clippings, mixed	14
Nickel silver turnings, mixed	13

Lead

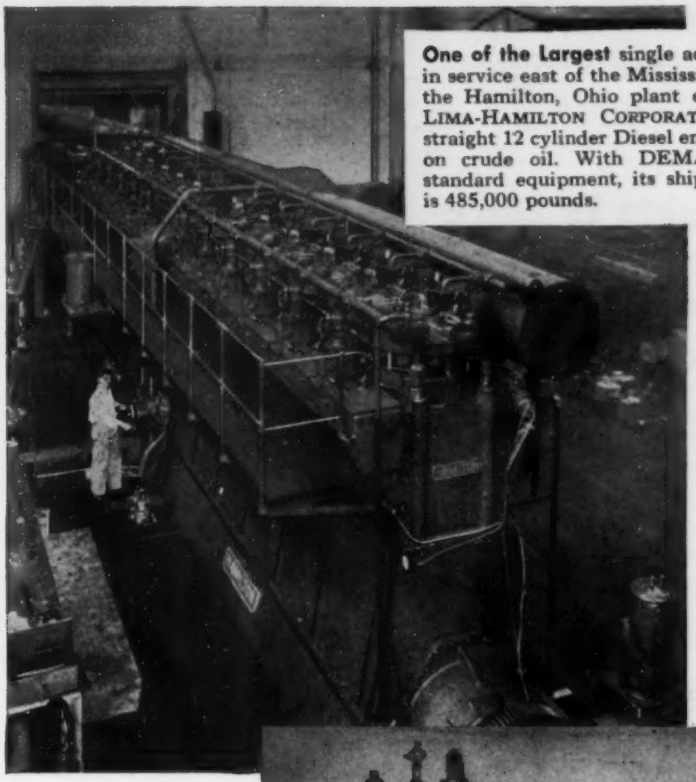
Soft scrap, lead	9¼— 9¾
Battery plates (dry)	4¾— 5
Batteries, acid free	3¾

Magnesium

Segregated solids	15 —16
Castings	14 —15

Miscellaneous

Block tin	80
No. 1 pewter	55
No. 1 auto babbitt	45
Mixed common babbitt	13½—14
Solder joints	15
Siphon tops	45
Small foundry type	14½
Monotype	12 —12½
Lino. and stereotype	11 —11½
Electrotype	9½— 9½
Hand picked type shells	7½
Lino. and stero. dross	4
Electro dross	3½



One of the Largest single acting engines in service east of the Mississippi. Built at the Hamilton, Ohio plant of BALDWIN-LIMA-HAMILTON CORPORATION, it is a straight 12 cylinder Diesel engine running on crude oil. With DEMA stationary standard equipment, its shipping weight is 485,000 pounds.

Nickel Alloys Help build stamina into an Engine that serves a city

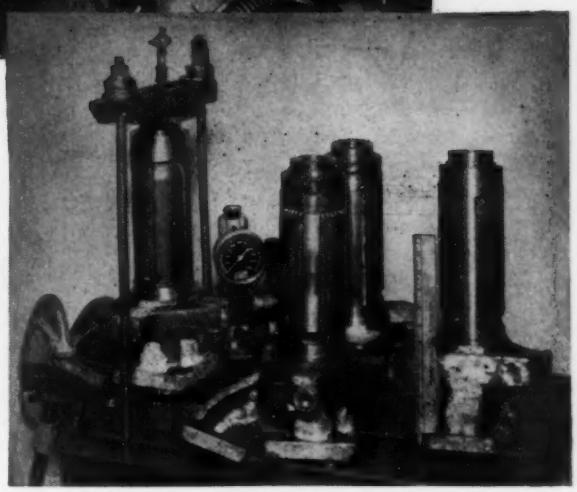
Built to handle the main power load for the city of Decatur, Indiana, this unit shows how nickel alloyed steels and irons are used in advanced design for increased power, quieter operation and longer trouble-free life.

Its forged crankshaft gear ... specified in Type 4340 or 9845 nickel alloyed steel ... provides:

Tensile strength	140,000 psi minimum
Yield Strength	118,000 psi
Elongation	16%
Reduction in area	45%
Brinell hardness	280 to 310

Piston heads are cast in high strength nickel-chromium iron to withstand heat stresses. Cylinder liners are one-piece castings containing .50% to .75% nickel and .25% molybdenum, for resistance to both heat and wear. Carburized nickel-molybdenum steel, Type 4615, is ordinarily specified for cams and rollers, and wrist pins are of Type 8620 nickel-chromium-molybdenum steel.

Consult us on the advantages of nickel in your products or equipment. Send us details of your applications for our suggestions.



Ductile Iron Gas Valve Bodies for HAMILTON Diesel engines undergo an 800-pound pressure test prior to assembly. Steel jackets are welded to these bodies with Ni-Rod 55. The castings are stress relieved for four hours, at 1200°F., and placed in service at 240 BHN. The Ductile Iron bodies prove sounder than those of cast steel, are easier to machine, and combine ample strength and ductility to withstand sudden pressure overloads.

At the present time, nickel is available for end uses in defense and defense supporting industries. The remainder of the supply is available for some civilian applications and governmental stockpiling.

EMBLEM OF INCO SERVICE

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

How Long to Lower Mill Stockpiles?

Return of brisk trading depends on how long steel mill stockpiles stay topheavy . . . Market may drowse through summer . . . Pittsburgh's big buyer shows no sign of buying.

Scrap iron and steel prices stayed in the deep valley where they had been pushed by dispirited demand. Not even an upward quiver could be detected. When brisk trading would return depended almost entirely on how long topheavy steel mill stockpiles could survive a fast melting rate.

But many scrap men were predicting market drowsiness to continue through the summer. Some recovery is expected within a month as inevitably mill stockpiles dwindle. There may also be some firming of prices—but at low levels.

In Pittsburgh the largest consumer was still holding up shipments and showed no inclination to make new commitments. Chicago buying was in small quantities. Philadelphia and New York markets stayed dull while Detroit was wondering just how low prices could go. Elsewhere, the story was almost identical.

Low prices and flat demand will have a crippling effect on the squads of peddlers who will switch to collecting more profitable items. Wreckers will also lose incentive to produce scrap.

Pittsburgh—Relatively little change is evident in the market this week. Openhearth grades are unchanged. Machine shop turnings and short turnings were off slightly. Outlook for the immediate future continues dark. Largest consumer in the area is still holding up shipments and shows no interest in making new commitments. Consumer inventories are high.

Chicago—Buying was in small quantities and broker buying conditioned by an expected further market drop last week. Tie-in sales in electric furnace grades were reported. Some turnings were said to be moving the same way, but action on all fronts was extremely slow. For example, a premium cast grade received an offering purchase price of $32. The broker refused to sell, but the new offering price was $10 below previous sales. Electric furnace appeared to be slipping badly.

Philadelphia—There is no notable change in the local scrap market this week but the undertone is one of pessimism and lack of confidence. Some dealers have been forced into laying down scrap because of very limited buying. Quotations generally remain at last week's levels. Some members of the trade anticipate further cuts, particularly in No. 2 bundles. Cupola cast is a bit cheaper at $38 to $40.

New York—Scrap prices held to their low valley with low trading giving them no impetus to either rise or fall. It's being estimated that the scrap flow has been cut by one-third in recent weeks. Lower prices are causing real anguish to peddlers and wreckers. Much of the trade is inclined to accept lower prices philosophically and is most worried about the decline in new business.

Detroit—Scrap dealers are holding an emergency meeting next week to probe the sagging market. Some grades have now dropped to the level of half ceiling price and no bottom is in sight yet. Only one area mill is doing any buying other than industrial lists, and this in only a token tonnage of No. 2 heavy melting. Best authorities do not predict an upturn of the market until August at the earliest.

Cleveland—Steelmaking grades remained steady here this week. There is growing optimism with many dealers and brokers predicting prices will level off at or near present levels. Railroad specialties have been sold for 60 days at the old $46 ceiling. Industrial turnings are moving from plants to at least three consumers in the area, but dealers complain their material is going begging at $3 under car shipments.

Birmingham—The scrap market in this area showed its customary first of the month activity. An Atlanta mill was a large buyer but the largest buyer in the district ordered only limited quantities. Some scrap was moving north. Dealers still are complaining about prices, which were unchanged this week. Cast was quiet.

St. Louis—Mills here are strongly entrenched with inventories and have about stopped buying to halt further investment in material, giving the scrap market another price tumble. Movement has been sufficient to cover outstanding orders, which are limited, and mills are rationing shipment. There is no speculative buying.

Cincinnati—Very little bullish sentiment is to be found in the Cincinnati area as openhearth grades slipped $1 all along the line. Slow rail movement sent random lengths down $3 to $42. Market generally is extremely dull with only one major consumer scheduled to buy limited tonnages in the near future. Cast and turnings sales are still rare.

Buffalo—Weakness dominates the market here. Prices remain soft but unchanged. Buying interest is negligible as dealers continue to ship against old orders. However, decided improvement in supplies makes it necessary for dealers to pile stock in yards. Water receipts are also increasing. One Lake boat arrived during the week with 5500 tons. Another is due. Several barge fleets are enroute but delayed by high waters on canal.

Boston—Scrap trading in the New England district remains sluggish this week with consumers very choosy on the quality of scrap they'll accept. Steelmaking scrap prices underwent some revision this week in the better grades and several grades of cast iron were reduced.

West Coast—The Seattle scrap market, which has been holding firm on prices despite major drops in California, is growing weaker. Relatively low dealer stocks due to a prolonged machinists' strike may restrain mills from any drastic drops. The differential is not enough, however, to make shipments from the sagging California market economically feasible.

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Scrap Prices

(Effective May 12, 1953)

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 bundles	39.00 to 40.00
No. 2 bundles	33.00 to 34.00
Machine shop turn	25.50 to 26.00
Mixed bor. and ms. turns.	25.50 to 26.00
Shoveling turnings	31.00 to 32.00
Cast iron borings	31.00 to 32.00
Low phos. punch'gs, plate	45.00 to 46.00
Heavy turnings	38.00 to 39.00
No. 1 RR. hvy. melting	43.00 to 44.00
Scrap rails, random lgth.	45.00 to 46.00
Rails 2 ft and under	51.00 to 52.00
RR. steel wheels	51.00 to 52.00
RR. spring steel	51.00 to 52.00
RR. couplers and knuckles	51.00 to 52.00
No. 1 machinery cast.	49.00 to 50.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	38.00 to 39.00
Malleable	44.00 to 45.00

Chicago

No. 1 hvy. melting	$35.00 to $37.00
No. 2 hvy. melting	33.00 to 35.00
No. 1 factory bundles	38.00 to 39.00
No. 1 dealers' bundles	36.00 to 37.00
No. 2 dealers' bundles	32.00 to 33.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	17.50 to 18.50
Cast iron borings	17.00 to 18.00
Low phos. forge crops	44.00 to 45.00
Low phos. punch'gs, plate	40.00 to 42.00
Low phos. 3 ft and under	40.00 to 42.00
No. 1 RR. hvy. melting	41.00 to 42.00
Scrap rails, random lgth.	44.00 to 46.00
Rerolling rails	46.00 to 47.00
Rails 2 ft and under	50.00 to 52.00
Locomotive tires, cut	46.00 to 47.00
Cut bolsters & side frames	46.00 to 47.00
Angles and splice bars	47.00 to 49.00
RR. steel car axles	50.00 to 52.00
RR. couplers and knuckles	46.00 to 47.00
No. 1 machinery cast.	42.00 to 43.00
Cupola cast.	39.00 to 41.00
Heavy breakable cast.	34.00 to 35.00
Cast iron brake shoes	34.00 to 35.00
Cast iron car wheels	39.00 to 40.00
Malleable	39.00 to 40.00
Stove plate	34.00 to 35.00

Philadelphia Area

No. 1 hvy. melting	$40.00 to $41.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 bundles	40.00 to 41.00
No. 2 bundles	30.00 to 32.00
Machine shop turn.	27.00 to 28.00
Mixed bor., short turn.	31.00 to 32.00
Shoveling turnings	32.00 to 33.00
Clean cast chem. borings	41.50 to 42.00
Low phos. 5 ft and under	43.50 to 44.50
Low phos. 2 ft and under	45.00 to 46.00
Low phos. punchings	45.50 to 46.50
Elec. furnace bundles	43.50 to 44.50
Heavy turnings	39.50 to 40.50
RR. steel wheels	49.00 to 50.00
RR. spring steel	49.00 to 50.00
Rails 18 in. and under	55.00 to 56.00
Cupola cast.	38.00 to 40.00
Heavy breakable cast.	43.50 to 44.50
Cast iron carwheels	46.00 to 47.00
Malleable	46.00 to 47.00
Unstripped motor blocks.	29.00 to 30.00
No. 1 machinery cast.	47.00 to 48.00
Charging box cast.	40.00 to 41.00

Cleveland

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 bundles	38.00 to 39.00
No. 2 bundles	33.00 to 34.00
No. 1 busheling	38.00 to 39.00
Machine shop turn.	23.00 to 24.00
Mixed bor. and turn.	28.00 to 29.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	28.00 to 29.00
Low phos. 2 ft and under	43.00 to 44.00
Drop forge flashings	38.00 to 39.00
No. 1 RR. hvy. melting	45.00 to 46.00
Rails 3 ft and under	52.00 to 53.00
Rails 18 in. and under	55.00 to 56.00
Railroad grate bars	40.00 to 41.00
Steel axle turnings	38.00 to 39.00
Railroad cast	47.00 to 48.00
No. 1 machinery cast.	47.00 to 48.00
Stove plate	43.00 to 44.00
Malleable	48.00 to 49.00

Youngstown

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 bundles	39.00 to 40.00
No. 2 bundles	32.00 to 33.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	28.00 to 29.00
Low phos. plate	47.00 to 48.00

Buffalo

No. 1 hvy. melting	$41.50 to $42.50
No. 2 hvy. melting	39.00 to 39.50
No. 1 busheling	42.00 to 43.00
No. 1 bundles	42.00 to 43.00
No. 2 bundles	37.00 to 37.50
Machine shop turn.	24.00 to 25.00
Mixed bor. and turn.	31.00 to 31.50
Shoveling turnings	29.50 to 30.50
Cast iron borings	27.00 to 28.00
Low phos. plate	44.00 to 45.00
Scrap rails, random lgth.	45.75 to 46.75
Rails 3 ft and under	51.75 to 52.75
RR. steel wheels	50.75 to 51.75
RR. spring steel	50.75 to 51.75
RR. couplers and knuckles	50.75 to 51.75
No. 1 machinery cast.	44.00 to 45.00
No. 1 cupola cast.	40.00 to 41.00

Detroit

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 bundles, openhearth	36.00 to 37.00
No. 2 bundles	23.00 to 24.00
Heavy turnings	27.00 to 28.00
New busheling	35.00 to 36.00
Drop forge flashings	35.00 to 36.00
Machine shop turn.	14.00 to 15.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Electric furnace, bundles	37.00 to 38.00
Low phos. punch'gs, plate	40.50 to 41.50
No. 1 cupola cast	44.00
Heavy breakable cast.	36.00
Stove plate	39.00
Automotive cast.	44.00

St. Louis

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	30.00 to 31.00
No. 2 bundled sheets	28.00 to 30.00
Machine shop turn.	16.00 to 18.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	13.00 to 14.00
Rails, random lengths	41.00 to 42.00
Rails 18 in. and under	50.00 to 52.00
Locomotive tires, uncut	43.00 to 44.00
Angles and spike bars	44.00 to 45.00
Std. steel car axles	48.00 to 50.00
RR. spring steel	43.00 to 44.00
Cupola cast.	40.00 to 41.00
Hvy. breakable cast.	30.00 to 32.00
Cast iron brake shoes	39.00 to 40.00
Stove plate	37.00 to 38.00
Cast iron car wheels	45.00 to 46.00
Malleable	35.00 to 36.00
Unstripped motor blocks.	33.00 to 34.00

New York

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	29.00 to 29.50
No. 2 bundles	25.00 to 26.00
Low phos. 2 ft and less	37.00 to 38.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	21.00 to 22.00
Clean cast chem. borings	32.00 to 33.00
No. 1 machinery cast.	43.00 to 44.00
Mixed yard cast.	34.00 to 35.00
Charging box cast.	36.00 to 37.00
Heavy breakable cast.	36.00 to 37.00
Unstripped motor blocks.	22.00 to 23.00

Birmingham

No. 1 hvy. melting	$29.50 to $30.50
No. 2 hvy. melting	27.00 to 28.00
No. 1 bundles	29.50 to 30.50
No. 2 bundles	25.00 to 26.00
No. 1 busheling	29.50 to 30.50
Machine shop turn.	20.75 to 21.75
Shoveling turnings	22.75 to 23.75
Cast iron borings	22.75 to 23.75
Electric furnace bundles	32.00 to 33.00
Bar crops and plate	39.00 to 40.00
Structural and plate, 2 ft	39.00 to 40.00
No. 1 RR. hvy, melting	35.00 to 36.00
Scrap rails, random lgth.	42.00 to 43.00
Rerolling rails	45.00 to 46.00
Rails, 18 in. and under	45.00 to 46.00
Angles & splice bars	45.00 to 46.00
Std. steel axles	45.00 to 46.00
No.1 cupola cast.	28.00 to 29.00
Stove plate	34.00 to 35.00
Cast iron car wheels	46.00 to 47.00
Charging box cast.	30.00 to 31.00
Heavy breakable	30.00 to 31.00
Unstripped motor blocks.	34.00 to 35.00
Mashed tin cans	22.00 to 23.00

Boston

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	....	$30.75
No. 2 hvy. melting	....	28.00
No. 1 bundles	....	30.25
No. 2 bundles	....	22.00
No. 1 busheling	$29.00 to	31.00
Elec. furnace, 3 ft & under	....	33.25
Machine shop turn.	16.00 to	17.00
Mixed bor. and short turn.	....	20.00
Shoveling turnings	....	20.00
Clean cast chem. borings	....	31.17
Mixed cupola cast.	28.00 to	29.00
Heavy breakable cast.	31.00 to	32.00
Stove plate	26.00 to	27.00
Unstripped motor blocks.	....	20.00

Cincinnati

Brokers' buying prices per gross ton, on cars:

No. 1 hvy melting	$38.00 to $39.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 bundles	38.00 to 39.00
No. 2 bundles	31.00 to 32.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Low phos. 18 in. & under	46.00 to 47.00
Rails, random lengths	41.00 to 42.00
Rails, 18 in. and under	52.00 to 53.00
No. 1 cupola cast.	41.00 to 42.00
Hvy. breakable cast.	37.00 to 38.00
Drop broken cast.	48.00 to 49.00

San Francisco

No. 1 hvy. melting	....	$29.00
No. 2 hvy. melting	....	25.00
No. 1 bundles	....	26.00
No. 2 bundles	....	23.00
No. 3 bundles	....	19.00
Machine shop turn.	....	11.00
Cast iron borings	....	15.00
No. 1 RR. hvy. melting	....	37.00
No. 1 cupola cast.	$39.00 to	$40.00

Los Angeles

No. 1 hvy. melting	$24.00 to $28.00
No. 2 hvy. melting	20.00 to 22.00
No. 1 bundles	23.00 to 25.00
No. 2 bundles	20.00 to 23.00
No. 3 bundles	.... 18.00
Mach. shop turn.	8.00 to 10.00
Shoveling turnings	12.00 to 14.00
Cast iron borings	12.00 to 14.00
Elec. fur. 1 ft and under.	.... 29.00
No. 1 RR. hvy. melting	.... 37.00
No. 1 cupola cast.	.... 39.00

Seattle

No. 1 hvy. melting	....	$33.00
No. 2 hvy. melting	....	29.00
No. 1 bundles	....	32.00
No. 2 bundles	....	26.00
No. 1 cupola cast.	....	37.00
Mixed yard cast.	....	35.00

Hamilton, Ont.

No. 1 hvy. melting	....	$35.50
No. 1 bundles	....	35.50
No. 2 bundles	....	35.00
Mechanical bundles	....	33.50
Mixed steel scrap	....	31.50
Bushelings	....	30.50
Bush., new fact. prep'd.	....	33.50
Bush., new fact. unprep'd.	....	32.50
Short steel turnings	....	32.50
Mixed bor. and turn.	....	32.50
Rails, remelting	....	35.50
Rails, rerolling	....	44.50
Cast scrap	....	50.00

Comparison of Prices

(Effective May 12, 1953)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	May 12 1953	May 5 1953	Apr. 14 1953	May 13 1952
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	3.775¢	3.775¢	3.775¢	3.60¢
Cold-rolled sheets	4.575	4.575	4.575	4.35
Galvanized sheets (10 ga)	5.075	5.075	5.075	4.80
Hot-rolled strip	3.725	3.725	3.725	3.50
Cold-rolled strip	5.20	5.20	5.20	4.75
Plate	3.90	3.90	3.90	3.70
Plates wrought iron	9.00	9.00	9.00	7.85
Stainl's C-R strip (No. 302)	39.75	39.75	39.75	36.75
Tin and Ternplate: (per base box)				
Tinplate (1.50 lb.) cokes	$8.95	$8.95	$8.95	$8.70
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.40
Special coated mfg. ternes	7.75	7.75	7.75	7.50
Bars and Shapes: (per pound)				
Merchant bars	3.95¢	3.95¢	3.95¢	3.70¢
Cold finished bars	4.925	4.925	4.925	4.55
Alloy bars	4.675	4.675	4.675	4.30
Structural shapes	3.85	3.85	3.85	3.65
Stainless bars (No. 302)	34.00	34.00	34.00	31.50
Wrought iron bars	10.05	10.05	10.05	9.50
Wire: (per pound)				
Bright wire	5.225¢	5.225¢	5.225¢	4.85¢
Rails. (per 100 lb.)				
Heavy rails	$4.075	$3.775	$3.775	$3.60
Light rails	5.00	4.25	4.25	4.00
Semifinished Steel: (per net ton)				
Rerolling billets	$59.00	$59.00	$59.00	$56.00
Slabs, rerolling	59.00	59.00	59.00	56.00
Forging billets	70.50	70.50	70.50	66.00
Alloy blooms, billets, slabs	76.00	76.00	76.00	70.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.325¢	4.325¢	4.325¢	4.10¢
Skelp	3.55	3.55	3.55	3.35
Composite: (per pound)				
Finished steel base price	4.390¢	4.376¢	4.376¢	4.131¢

	May 12 1953	May 5 1953	Apr. 14 1953	May 13 1952
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$60.69	$60.69	$60.69	$58.19
Foundry, Valley	55.00	55.00	55.00	52.50
Foundry, Southern, Cin'ti	58.93	58.93	58.93	55.58
Foundry, Birmingham	51.38	51.38	51.38	48.88
Foundry, Chicago†	55.00	55.00	55.00	52.50
Basic del'd Philadelphia	59.77	59.77	59.77	57.27
Basic, Valley furnace	54.50	54.50	54.50	52.00
Malleable, Chicago†	55.00	55.00	55.00	52.50
Malleable, Valley	55.00	55.00	55.00	52.50
Ferromanganese‡	226.99	226.25	226.25	186.25

† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. Prices quoted on Ferroalloy pages.

Composite: (per gross ton)				
Pig iron	$55.26	$55.26	$55.26	$52.77
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$39.50	$39.50	$43.75	$43.00*
No. 1 steel, Phila. area	40.50	40.50	43.50	41.50*
No. 1 steel, Chicago	*36.00*	36.50	41.00	41.50*
No. 1 bundles, Detroit	*36.50*	38.50	40.50	41.15*
Low phos., Youngstown	47.50	47.50	49.50	46.50*
No. 1 mach'y cast, Pittsburgh	49.50	49.50	50.50	52.75
No. 1 mach'y cast, Philadel'a.	47.50	47.50	47.50	52.00*
No. 1 mach'y cast, Chicago	*42.50*	44.00	45.50	46.25

* Basing pt., less broker's fee. † Shipping pt., less broker's fee. Delivered prices, including broker's fee, unless otherwise noted.

Composite: (per gross ton)				
No. 1 heavy melting scrap	*$38.66*	$38.83	$42.75	$42.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.75	$14.75	$14.75	$14.75
Foundry coke, prompt	17.25	17.25	17.25	17.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	29.875‡	29.75‡	31.00‡	24.50
Copper, Lake, Conn.	.....	.....	33.00	24.625
Tin, Straits, New York	*96.50*†	98.00*	98.50	$1.21½
Zinc, East St. Louis	11.00	11.00	11.00	19.50
Lead, St. Louis	12.30	12.30	12.80	14.80
Aluminum, virgin ingot	20.50	20.50	20.50	19.00
Nickel, electrolytic	63.08	63.08	63.08	50.58
Magnesium, ingot	27.00	27.00	27.00	24.50
Antimony, Laredo, Tex.	34.50	34.50	34.50	44.00

† Tentative. ‡ Average. * Revised.

Composite Price Notes

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Scrap Steel Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Warehouse Price Notes

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1)500 to 1499 lb, (2)6000 lb or over, (3)450 to 1499 lb, (4)2000 to 3999 lb.

WAREHOUSES

Base price, f.o.b., dollars per 100 lb.

Cities	City Delivery Charge	Sheets: Hot-Rolled	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)	Strip: Hot-Rolled	Strip: Cold-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled	Bars: Cold-Finished	Alloy Bars: Hot-Rolled A 4615 As rolled	Alloy Bars: Hot-Rolled A 4140 Annealed	Alloy Bars: Cold-Drawn A 4615 As rolled	Alloy Bars: Cold-Drawn A 4140 Annealed
Baltimore	$.20	5.81	7.17	7.33-8.04	6.42	.....	6.05	6.47	6.41	7.18-7.43	.....	.....	.....	.....
Birmingham	.15	5.80	6.65	7.70[1]	5.80	.....	6.10	5.95	5.80	7.85	.....	.....	.....	.....
Boston	.20	6.45-6.52	7.35-7.71	8.34-8.39	6.55	8.50[2]	6.75-6.80	6.56	6.42-6 57	7.49-7.64	10.85	11.15-11.17	12.85	13.15-13.18
Buffalo	.20	5.77-5.80	6.60-6.65	8.31	6.00-6.21	.....	6.30-6.40	6.08-6.15	6.05	.....	10.70	11.00-11.07	12.70	13.00-13.07
Chicago	.20	5.80-5.81	6.65	7.90	5.83-5.84	.....	5.95-6.00	5.95	5.83	6.81-7.025	.....	10.65	.....	12.65
Cincinnati	.20	6.13	6.72	8.21	6.14	.....	6.47	6.42	.....	7.32	.....	11.07	.....	13.07
Cleveland	.20	5.80-5.81	6.65	7.54	6.00-6.01	.....	6.12-6.17	6.28	5.89-6.04	6.91-7.10	.....	10.79	.....	12.79
Denver	.....	7.17-7.39	8.23	9.60	7.43-7.69	8.90	7.37-7.54	7.50-7.80	7.61-7.71	8.24-8.48	.....	.....	.....	.....
Detroit	.20	5.99-6.00	6.81-6.90	8.59	6.13-6.34	7.29-7.85	6.45-6.47	6.42-6.69	6.12-6.47	7.23-7.32	10.72	.....	12.72	12.42-12.92
Houston	.20	6.35-6.74	7.00-7.78	8.62-8.70	6.70-6.95	.....	6.60-6.85	6.60-6.82	6.75-7.00	9.00-9.35	11.90	11.35-11.90	13.60	13.90
Kansas City	.20	6.47	7.31	8.62	6.51	.....	6.62-6.67	6.62	6.50	7.57	.....	11.32	.....	.....
Los Angeles	.20	6.60	8.45	8.45	6.70	9.15	6.70	6.60-9.40	6.60	8.60-9.40	.....	12.05	.....	14.40
Memphis	.10	6.56	7.40	.....	6.98	.....	6.71	6.71	6.59	7.77	.....	.....	.....	.....
Milwaukee	.20	5.97-6.16	6.82	8.07	6.00-6.20	.....	6.12-6.36	6.12-6.31	6.00	7.08-7.30	.....	10.82	.....	12.82
New Orleans	.15	6.28	7.12	.....	6.32	8.32	6.43	6.43	6.31	7.85	.....	.....	.....	.....
New York	.30	6.11-6.62	7.27-7.41	8.07-8.53	6.56-6.72	8.94	6.60-6.88	6.34-6.39	6.59-6.74	7.71-7.90	10.68-10.74	10.91-11.04	12.67-12.74	12.97-13.04
Norfolk	.20	6.75	.....	.....	7.30	.....	6.65	6.65	6.55	8.30	.....	.....	.....	.....
Philadelphia	.25	6.11	7.13	7.95-8.30	6.45-6.46	.....	6.24-6.28	6.17	6.62	.....	.....	10.67-10.79	.....	12.79
Pittsburgh	.20	5.80-5.81	6.65	7.90	5.94-5.97	.....	5.95-6.00	5.95	5.83-5.98	6.66-7.12	.....	10.65	.....	12.65
Portland	.20	7.80	9.05	9.15-9.30	7.50	.....	7.05	7.25	7.25	9.40	.....	.....	.....	.....
Salt Lake City	.20	8.30	.....	10.90[3]	8.45	.....	7.85	8.00	8.40	9.35[4]	.....	.....	.....	.....
San Francisco	.15	6.90	8.20	9.50	6.75	9.25-9.70	6.75	6.50	6.65	8.40-9.40	.....	12.05	.....	14.60
Seattle	.20	7.16-7.36	8.24-8.34	9.20-9.40	7.20-7.45	.....	7.04-7.19	6.63-6.83	7.08	9.37	.....	11.70	.....	13.70
St. Louis	.20	6.10-6.11	6.94-6.95	8.20	6.14	8.27-8.39	6.35-6.40	6.35	6.13	7.21-7.43	10.65	10.95	12.65	12.95
St. Paul	.15	6.47	7.31-7.61	8.56	6.50	.....	6.61-6.66	6.61	7.57	7.32-7.57	.....	11.31	.....	.....

STEEL PRICES

(Effective May 12, 1958)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL-ING	SHAPES STRUCTURALS		STRIP			
		Carbon Forging Net Ton	Alloy Net Ton	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Sheet Steel	Carbon	Hi Str. Low Alloy	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy
EAST	Bethlehem, Pa.					$76.00 *B3*			3.90 *B3*	5.80 *B3*				
	Buffalo, N. Y.			$59.00 *B3*	$70.50 *B3, R3*	$76.00 *B3, R3*		4.675 *B3*	3.90 *B3*	5.80 *B3*	3.725 *B3, R3*	5.10 *B3*	5.70 *B3*	7.90 *B3*
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.				$77.50 *A2*	$83.00 *A2*					4.125 *A2*		5.90 *A2*	
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.			$59.00 *B3*	$70.50 *B3*	$76.00 *B3*			3.90 *B3*	5.80 *B3*	3.725 *B3*			
	Newark, N. J.													
	New Haven, Conn.											5.60 *A5* 5.85 *D1*		
	Phoenixville, Pa.								4.95 *P2*					
	Putnam, Conn.													
	Sparrows Pt., Md.										3.725 *B3*	5.10 *B3*	5.70 *B3*	7.90 *B3*
	Worcester, Mass.													
	Trenton, N. J.											6.45 *R4*		
MIDDLE WEST	Alton, Ill.										4.20 *L1*			
	Ashland, Ky.										3.725 *A7*			
	Canton-Massillon, Ohio				$70.50 *R3*	$76.00 *R3* $78.60 *T5*								
	Chicago, Sterling, Ill.			$59.00 *U1*	$70.50 *U1, R3,W8*	$76.00 *U1, R3,W8*		4.675 *U1*	3.85 *U1, W8*	5.80 *U1*	3.725 *A1,W8* 4.725 *N4*	5.35 *A1*		
	Cleveland, Ohio				$70.50 *R3*							5.10 *A5,J3*		7.45 *J3*
	Detroit, Mich.	$56.00 *R5*	$57.00 *R5*		$73.50 *R5*	$79.00 *R5*					4.025 *G3* 4.40 *M2*	5.30 *G3* 5.45 *M2* 5.60 *D1* 6.05 *D2*	6.30 *G3*	8.15 *G3*
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana			$59.00 *U1*	$70.50 *U1*	$76.00 *U1, Y1*		4.675 *I3*	3.85 *I3, U1*	5.80 *I3, U1* 6.30 *Y1*	3.725 *I3, U1,Y1*	5.35 *I3*	5.65 *I3, U1* 6.15 *Y1*	
	Granite City, Ill.													
	Kokomo, Ind.													
	Middletown, Ohio											5.10 *A7*		
	Niles, Ohio Sharon, Pa.										4.225 *S1*	5.70 *T4* 5.80 *S1*	5.65 *S1*	7.30 *S1*
	Pittsburgh, Pa. Midland, Pa.	$54.00 *U1*	$57.00 *U1, C11*	$59.00 *U1*	$70.50 *U1*	$76.00 *U1, C11*	3.55 *U1* 3.65 *J3*	4.675 *U1*	3.85 *U1,J3*	5.80 *U1,J3*	3.725 *A7* 3.975 *A3* 4.225 *S7,S9*	5.10 *J3,A7* 5.45 *A3* 5.80 *B4,S7*	7.45 *J3*	
	Portsmouth, Ohio													
	Weirton, Wheeling, Follansbee, W. Va.								4.10 *W3*		3.825 *W3*	5.10 *W3*	6.10 *W3*	7.95 *W3*
	Youngstown, Ohio					$76.00 *Y1, C10*	3.55 *U1, R3*			6.30 *Y1*	3.725 *U1, Y1,R3*	5.10 *R3,Y1* 5.70 *C5* 5.80 *B4*	5.65 *R3, U1* 6.15 *Y1*	7.30 *R3* 7.80 *Y1*
WEST	Fontana, Cal.	$81.00 *K1*	$83.00 *K1*	$78.00 *K1*	$89.50 *K1*	$95.00 *K1*			4.50 *K1*	6.45 *K1*	5.175 *K1*	7.00 *K1*	6.75 *K1*	
	Geneva, Utah				$70.50 *C7*				3.85 *C7*	5.80 *C7*				
	Kansas City, Mo.								4.45 *S2*		4.325 *S2*			
	Los Angeles, Torrance, Cal.				$89.50 *B2*	$96.00 *B2*			4.45 *C7,B2*	6.35 *B2*	4.475 *C7,B2*	7.15 *C1*	6.40 *B2*	
	Minnequa, Colo.								4.30 *C6*		4.775 *C6*			
	San Francisco, Niles, Pittsburg, Cal.				$89.50 *B2*				4.40 *B2* 4.56 *P9*	6.30 *B2*	4.475 *C7,B2*		6.40 *B2*	
	Seattle, Wash.				$89.50 *B2, S11*	$96.00 *S11*			4.50 *B2*	6.40 *B2*	4.725 *B2*		6.65 *B2*	
SOUTH	Atlanta, Ga.										4.275 *A8*			
	Fairfield, Ala. Alabama City, Ala.			$59.00 *T2*	$70.50 *T2*				3.85 *T2,R3*	5.80 *T2*	3.725 *T2,R3*		5.65 *T2*	
	Houston, Texas		$65.00 *S2*		$78.50 *S2*	$84.00 *S2*			4.25 *S2*		4.125 *S2*			

STEEL PRICES

(Effective May 12, 1953)

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SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE	
...rolled ...ga. ...hvyr.	Cold-rolled	Galvanized *10* ga.	Enameling *12* ga.	Long Terne *10* ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled *19* ga.		Cokes* *1.25*-lb. base box	Electro* *1.25*-lb. base box	Holloware Enameling *29* ga.	
													Bethlehem, Pa.
...75 *B3*	4.575 *B3*				5.675 *B3*	6.925 *B3*							Buffalo, N. Y.
										† Special coated mfg terne deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb deduct $2.20 from 1.25-lb coke base box. * COKES: 1.50-lb add 25¢. ELECTRO: 0.50-lb add 25¢; 0.75-lb add 65¢.			Claymont, Del.
													Coatesville, Pa.
...75 *A2*					5.925 *A2*								Conshohocken, Pa.
													Harrisburg, Pa.
													Hartford, Conn.
									4.325 *B3*				Johnstown, Pa.
													Newark, N. J.
													New Haven, Conn.
													Phoenixville, Pa.
													Putnam, Conn.
...75 *B3*	4.575 *B3*	5.075 *B3*			5.675 *B3*	6.925 *B3*	7.775 *B3*		4.425 *B3*	$8.80 *B3*	$7.50 *B3*		Sparrows Pt., Md.
									4.625 *A5*				Worcester, Mass.
									4.425 *R4*				Trenton, N. J.
									4.70 *L1*				Alton, Ill.
...075 *A7*		5.075 *A7*	4.925 *A7*										Ashland, Ky.
		5.075 *R3*											Canton-Massillon, Ohio
...775 *W8*					5.675 *U1*				4.325 *A5, N4, R3*				Chicago, Ill.
									4.425 *N4*				Sterling, Ill.
...775 *R3, J3*	4.575 *R3, J3*		4.925 *R3*		5.675 *R3, J3*	6.925 *R3, J3*			4.325 *A5*				Cleveland, Ohio
...975 *G3*	4.775 *G3*				6.225 *G3*	7.475 *G3*							Detroit, Mich.
													Duluth, Minn.
...775 *I3, U1, Y1*	4.575 *I3, U1, Y1*	5.075 *I3, U1*	4.925 *U1*	5.475 *U1*	5.675 *I3, U1* 6.175 *Y1*	6.925 *I3, U1* 7.425 *Y1*				$8.70 *U1, I3, Y1*	$7.40 *U1, I3*	6.10 *U1, Y1*	Gary, Ind. Harbor, Indiana
...30 *G2*	5.275 *G2*	5.275 *G2*	5.625 *G2*								$7.60 *G2*	6.30 *G2*	Granite City, Ill.
		5.475 *C9*											Kokomo, Ind.
	4.575 *A7*		4.925 *A7*	5.475 *A7*									Middletown, Ohio
...175 *S1*					5.675 *S1*						$7.40 *R3*		Niles, Ohio Sharon, Pa.
...775 *U1, J1, A7* ...925 *A3*	4.575 *U1, J3, A7*	5.075 *U1*	4.925 *U1*		5.675 *U1, J3*	6.925 *U1, J3*	7.625 *U1*		4.325 *A5* 4.525 *P6*	$8.70 *U1, J3*	$7.40 *U1, J3*	6.10 *U1*	Pittsburgh, Pa. Midland, Pa.
									4.525 *P7*				Portsmouth, Ohio
...775 *W3, W5*	4.575 *W3, W5*	5.075 *W3, W5*		5.475 *W3, W5*	6.025 *W3*	7.275 *W3*				$8.70 *W3, W5*	$7.40 *W3, W5*	6.35 *W5*	Weirton, Wheeling, Follansbee, W. Va.
...775 *U1, R3, Y1*	4.575 *R3, Y1*	5.775 *R1*	4.925 *Y1*	6.05 *E2*	5.675 *R3 U1* 6.175 *Y1*	6.925 *R3* 7.425 *Y1*		5.65 *E2* 5.825 *R1*	4.325 *Y1*	$8.70 *R3*			Youngstown, Ohio
...825 *K1*	5.675 *K1*				6.775 *K1*	7.975 *K1*			5.125 *K1*				Fontana, Cal.
...075 *C7*													Geneva, Utah
													Kansas City, Mo.
...475 *C7*		5.825 *C7*						5.575 *C7*	5.125 *C7, B2*				Los Angeles, Torrance, Cal.
									4.575 *C6*				Minnequa, Colo.
...475 *C7*	5.525 *C7*	5.825 *C7*							4.975 *C7*	$9.45 *C7*	$8.15 *C7*		San Francisco, Niles, Pittsburg, Cal.
													Seattle, Wash.
													Atlanta, Ga.
...775 *T2, R3*	4.575 *T2*	5.075 *T2, R3*			5.675 *T2*			4.925 *R3*	4.325 *T2, R3*	$8.80 *T2*	$7.50 *T2*		Fairfield, Ala. Alabama City, Ala.
									4.725 *S2*				Houston, Tex.

STEEL PRICES

(Effective May 12, 1958)

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		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfg'g. Bright
EAST	Bethlehem, Pa.				4.675 *B3*	6.00 *B3*	5.925 *B3*					
	Buffalo, N. Y.	3.95 *B3,R3*	3.95 *B3,R3*	4.975 *B5*	4.675 *B3,R3*	6.00 *B3,B5*	5.925 *B3*	3.90 *B3*			5.95 *B3*	
	Claymont, Del.							4.35 *C4*		5.35 *C4*		
	Coatesville, Pa.							4.35 *L4*		5.75 *L4*		
	Conshohocken, Pa.							4.35 *A2*	4.95 *A2*		6.20 *A2*	
	Harrisburg, Pa.							6.50 *C3*	6.50 *C3*			
	Hartford, Conn.			4.475 *R3*		6.45 *R3*						
	Johnstown, Pa.	3.95 *B3*	3.95 *B3*		4.675 *B3*		5.925 *B3*	3.90 *B3*		5.25 *B3*	5.95 *B3*	5.225 *B3*
	Newark, N. J.			5.375 *W10*		6.35 *W10*						
	New Haven, Conn.											
	Camden, N. J.			5.375 *P10*		6.35 *P10*						
	Putnam, Conn.			5.475 *W10*								
	Sparrows Pt., Md.		3.95 *B3*					3.90 *B3*		5.25 *B3*	5.95 *B3*	5.325 *B3*
	Worcester, Mass.					6.35 *A5*						5.525 *A5*
	Trenton, N. J.											
MIDDLE WEST	Alton, Ill.	4.50 *L1*										5.45 *L1*
	Ashland, Ky.							3.90 *A7*				
	Canton-Massillon	3.95 *R3*		4.925 *R2,R3*	4.675 *R3* 4.72 *T5*	5.99 *T5* 6.00 *R2,R3*						
	Chicago, Ill.	3.95 *U1,W8, R3* 4.55 *N4*	3.95 *R3* 4.70 *N4*	4.925 *A5,B5 W8,W10*	4.675 *R3, U1, W8*	6.00 *B5,L2, R3,W8,W10* 6.05 *A5*		3.90 *U1,W8*	4.95 *U1*	5.25 *U1*	5.95 *U1*	5.225 *A5, N4,R3* 5.325 *K2* 5.475 *W7*
	Cleveland, Ohio	3.95 *R3*	3.95 *R3*	4.925 *A5,C13*		6.00 *C13* 6.05 *A5*	5.925 *R3*	3.90 *R3,J3*	4.95 *J3*		5.95 *R3,J3*	5.225 *A5, C13,R3*
	Detroit, Mich.	4.10 *R5* 4.30 *G3*		5.075 *R5,P8* 5.175 *P3* 5.125 *P5*	4.825 *R5* 5.025 *G3*	6.15 *R5,P8* 6.20 *P3, B5*	6.675 *G3*	4.45 *G3*			6.90 *G3*	
	Duluth, Minn.											5.252 *A5*
	Gary, Ind. Harbor, Crawfordsville, Indiana	3.95 *I3, U1, Y1*	3.95 *I3, U1, Y1*	4.925 *L2, M5,R3*	4.675 *I3, U1, Y1*	6.00 *L2,M5, R3,R5*	5.925 *I3, U1,* 6.425 *Y1*	3.90 *I3, U1, Y1*	4.95 *I3*	5.25 *U1*	5.95 *I3, U1,* 6.45 *Y1*	5.325 *M4*
	Granite City, Ill.							4.60 *G2*				
	Kokomo, Ind.											5.325 *C9*
	Sterling, Ill.		4.80 *N4*									5.325 *N4*
	Niles, Ohio Sharon, Pa.							4.15 *S1*		5.70 *S1*	5.95 *S1*	
	Pittsburgh, Pa. Midland, Pa.	3.95 *U1,J3*	3.95 *U1,J3*	4.925 *A5,J3, W10,R3,C8*	4.675 *U1, C11*	6.00 *C8,C11, W10* 6.05 *A5*	5.925 *U1,J3*	3.90 *U1,J3*	4.95 *U1*	5.25 *U1*	5.95 *U1,J3*	5.225 *A5,J3* 5.475 *P6*
	Portsmouth, Ohio											5.625 *P7*
	Weirton, Wheeling, Follansbee, W. Va.	4.10 *W3*						3.90 *W5* 4.20 *W3*				
	Youngstown, Ohio	3.95 *U1,Y1, R3*	3.95 *U1,Y1, R3*	4.925 *F2,Y1*	4.675 *U1, C10,Y1*	6.00 *C10,F2, Y1*	5.925 *U1* 6.425 *Y1*	3.90 *U1,Y1, R3*			5.95 *R3* 6.45 *Y1*	5.225 *Y1*
WEST	Fontana, Cal.	4.65 *K1*	4.65 *K1*		5.725 *K1*		6.175 *K1*	4.55 *K1*		6.30 *K1*	6.65 *K1*	
	Geneva, Utah							3.90 *C7*			5.95 *C7*	
	Kansas City, Mo.	4.55 *S2*	4.55 *S2*		5.275 *S2*							5.825 *S1*
	Los Angeles, Torrance, Cal.	4.65 *C7,B2*	4.65 *C7,B2*	6.375 *R3*	5.725 *B2*		6.625 *B2*					6.175 *C7,B1*
	Minnequa, Colo.	4.40 *C6*	4.75 *C6*					4.70 *C6*				5.475 *C6*
	San Francisco, Niles, Pittsburg, Cal.	4.65 *C7,P9* 4.70 *B2*	4.65 *C7,P9* 4.70 *B2*				6.675 *B2*					6.175 *C6,C7*
	Seattle, Wash.	4.70 *B2, S11*	4.70 *B2, S11*		5.725 *S11*		6.675 *B2*	4.80 *B2*			6.85 *B2*	
SOUTH	Atlanta, Ga.	4.59 *A8*	4.50 *A8*									5.475 *A8*
	Fairfield, Ala. Alabama City, Ala.	3.95 *T2,R3*	3.95 *T2,R3*				5.925 *T2*	3.90 *T2,R3*			5.95 *T2*	5.225 *T2, R3*
	Houston, Texas Ft. Worth, Texas	4.35 *S2*	4.35 *S2* 5.05 *T7*		5.875 *S2*			4.30 *S2*				5.625 *S2*

Steel Prices

(Effective May 12, 1953)

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia-Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Glassport, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Co., Inc., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Co., Pittsburgh
N3 Niles Rolling Mills Co., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N5 Newport Steel Corp., Newport, Ky.

O1 Oliver Iron & Steel Co., Pittsburgh

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div. Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co. (John A.), Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sloss Sheffield Steel & Iron Co., Birmingham
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Sweet's Steel Co., Williamsport, Pa.
S11 Seidelhuber Steel Rolling Mills, Seattle

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.
T7 Texas Steel Co., Ft. Worth

U1 United States Steel Co., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh

Y1 Youngstown Sheet & Tube Co., Youngstown

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails Col	Woven Wire Fence 9-15½ ga. Col	Fence Posts Col	Single Loop Bale Ties Col	Twisted Barbless Wire Col	Galv. Barbed Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*†	127	135	...	132	...	144	6.075	6.325
Aliquippa, Pa. *J3*	127	141	...	...	...	148	6.075	6.525
Atlanta *A8*	130	140	...	135	...	149	6.325	6.675
Bartonville *K2*	127	139	140	132	148	148	6.075	6.50
Buffalo *W6*	...	...	...	...	...	...	...	...
Chicago *N4*	127	136	...	132	145	145	6.075	6.375
Cleveland *A6*	...	...	...	...	...	...	...	...
Cleveland *A5*	...	...	...	...	...	...	6.075	6.225
Crawfordsville *M4*	127	138	...	132	...	147	6.175	6.475
Donora, Pa. *A5*	127	133	...	132	142	142	6.075	6.225
Duluth *A5*	127	133	...	132	142	142	6.075	6.225
Fairfield, Ala. *T2*	127	133	...	132	142	142	6.075	6.225
Galveston *D4*	135	...	...	...	...	...	...	...
Houston *S2*	135	147	...	...	...	156	6.475	6.925
Johnstn., Pa. *B3*	127	...	148	...	149	...	...	6.575
Joliet, Ill. *A5*	127	133	...	132	142	142	6.075	6.225
Kokomo, Ind. *C9*	...	...	142	...	...	...	6.175	6.425
Los Angeles *B2*	...	...	...	...	...	...	7.025	...
Kansas City *S2*	139	...	...	144	...	160	6.075	7.125
Minnequa *C6*	132	146	138	137	...	153	6.325	6.70
Moline, Ill. *R3*	...	...	136	...	...	...	...	...
Pittsburg, Cal. *C7*	146	156	...	156	162	162	7.025	7.175
Monessen *P6*	127	138	...	...	147	147	6.075	6.45
Portsmouth *P7*	132	...	...	...	...	...	6.47	...
Rankin, Pa. *A5*	127	133	...	...	142	142	6.075	6.225
So. Chicago *R3*†	127	135	140	132	...	144	6.075	6.325
S. San Fran. *C6*	...	...	...	153	...	167	7.025	7.40
Sparrows Pt. *B3*	129	...	...	134	151	...	...	6.675
Struthers, O. *Y1*‡	...	...	...	...	...	...	6.075	6.475
Torrance, Cal. *C7*	147	...	...	...	...	...	7.025	...
Worcester *A5*	133	...	...	...	...	...	6.375	6.525
Williamsport, Pa. *S10*	...	...	...	...	...	...	...	...

Cut Nails, carloads base $7.80 per 100 lb. (less 20¢ to jobbers) at Conshohocken, Pa. (*A2*) Wheeling, W. Va. (*W5*) $7.80.

† **Zinc extra not included on Galv. Merch. Wire.**

‡ **Struthers Galv. Merch. Wire based on 15¢ Zinc.**

STAINLESS STEELS

Base price, cents per lb., f.o.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	15.50	16.50	18.00	17.50	26.75	21.75	23.50	13.50	16.25	13.75
Slabs, billets, rerolling	19.75	21.75	23.75	22.75	34.75	28.25	30.75	17.50	21.50	17.75
Forg. discs, die blocks, rings	36.75	37.00	39.75	38.50	57.25	43.50	48.25	30.00	30.50	30.50
Billets, forging	28.25	28.50	30.75	29.75	44.75	33.75	37.75	23.00	23.50	23.50
Bars, wires, structurals	33.75	34.00	36.50	35.50	53.00	40.00	44.75	27.50	28.00	28.00
Plates	35.75	35.75	38.00	38.00	56.00-56.25	44.00	49.00	28.75	29.75	29.25
Sheets	44.25	44.50	46.50	46.50	61.50	53.00	58.00	39.00	39.50	41.50
Strip, hot-rolled	28.50	30.50	35.00	32.75	52.50	40.00	44.50	25.00	32.75	25.75
Strip, cold-rolled	36.50	39.75	43.50	41.75	63.50	52.00	56.50	32.75	39.50	33.25

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* McKeesport, Pa., *U1;* Washington, Pa., *W2;* (type 316 add 4.5¢) *J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Ft. Wayne, *J4;* Lockport, N. Y., *R4.*

Strip: Midland, Pa., *C11;* Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2* (type 316 add 4.5¢); W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton-Massillon, O., *R3;* Middletown, O., *A7;* Harrison, N. J., *D3;* Youngstown, *C5;* Lockport, N. Y., *S4;* Sharon, Pa., *S1* (type 301 add ¼¢); Butler, Pa., *A7;* Wallingford, Conn., *W1.*

Bars: Baltimore, *A7;* Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R3;* Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Lockport, N. Y., *S4;* Canton, O., *T5;* Ft. Wayne, *J4.*

Wires: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11.*

Plates: Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Lockport N. Y., *S4;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3.*

Forged discs, die blocks, rings: Pittsburgh, *C11;* Syracuse, *C11;* Ferndale, Mich., *A3;* Washington, Pa., *J2.*

Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11.*

WASHINGTON STEEL—Slightly lower on 300 series except where noted.

Miscellaneous Prices

(Effective May 12, 1958)

PIPE AND TUBING

Base discounts f.o.b. mills. Base price about $280 per net ton.

	BUTTWELD														SEAMLESS					
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½–3 In.		3½–4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																				
Sparrows Pt. *B3*	30.5	8.25	33.5	12.25	35.5	15.75	36.5	16.25	37.0	17.25	37.5	17.75	38.0	18.25	.....	.....	.....	.....	.....	.....
Youngstown *R3*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	.....	.....	.....	.....	.....	.....
Fontana *K1*	19.5	+2.75	22.5	1.25	25.0	4.75	25.5	5.25	26.0	6.25	26.5	6.75	27.0	7.25	.....	.....	.....	.....	.....	.....
Pittsburgh *J3*	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75	24.0	2.25	27.0	5.75	29.0	7.75
Alton, Ill. *L1*	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25	.....	.....	.....	.....	.....	.....
Sharon *M3*	32.5	9.25	35.5	13.25	38.0	16.25	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.25	.....	.....	.....	.....	.....	.....
Pittsburgh *N1*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	.....	27.0	.....	29.0	.....
Wheeling *W5*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	.....	.....	.....	.....	.....	.....
Wheatland *W4*	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75	.....	.....	.....	.....	.....	.....
Youngstown *Y1*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
Indiana Harbor *Y1*	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25	.....	.....	.....	.....	.....	.....
Lorain *N2*	32.5	15.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
EXTRA STRONG PLAIN ENDS																				
Sparrows Pt. *B3*	30.25	9.5	34.25	13.5	36.25	17.0	36.75	17.5	37.25	18.5	37.75	19.0	38.25	19.5	.....	.....	.....	.....	.....	.....
Youngstown *R3*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	.....	.....	.....	.....	.....	.....
Fontana *K1*	19.25	.....	22.25	.....	25.25	.....	25.75	.....	26.25	.....	26.75	.....	27.25	.....	.....	.....	.....	.....	.....	.....
Pittsburgh *J3*	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0	23.75	2.0	27.75	6.5	31.25	10.0
Alton, Ill. *L1*	29.25	8.5	33.25	12.5	35.25	16.0	35.75	16.5	36.25	17.5	36.75	18.0	37.25	18.5	.....	.....	.....	.....	.....	.....
Sharon *M3*	32.25	10.5	36.25	14.5	38.25	17.5	38.75	18.0	39.25	18.5	39.75	19.0	40.25	19.5	.....	.....	.....	.....	.....	.....
Pittsburgh *N1*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75	.....	27.75	.....	31.25	.....
Wheeling *W5*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	.....	.....	.....	.....	.....	.....
Wheatland *W4*	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0	.....	.....	.....	.....	.....	.....
Youngstown *Y1*	32.25	11.5	36.25	15.5	37.75	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	22.5	23.75	4.5	27.75	8.5	31.25	12.0
Indiana Harbor *Y1*	31.25	10.5	35.25	14.5	37.25	17.5	37.75	18.5	38.25	19.5	38.75	20.0	39.25	20.5	.....	.....	.....	.....	.....	.....
Lorain *N2*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75	4.5	27.75	8.5	31.25	12.0

Galvanized discounts based on zinc, at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb. of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only buttweld and seamless, 1 pt. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 3¾ pts. higher discount. Buttweld jobbers' discount, 5 pct. St. Louis zinc price now 11.0¢.

COKE

	Net-Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	$14.50 to $15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	$16.50 to $18.00
Foundry, oven coke	
Buffalo, del'd	$28.08
Chicago, f.o.b.	24.50
Detroit, f.o.b.	25.50
New England, del'd	26.05
Seaboard, N. J., f.o.b.	24.00
Philadelphia, f.o.b.	23.95
Swedeland, Pa., f.o.b.	23.85
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.43
Cincinnati, del'd	26.56
St. Paul, f.o.b.	22.50
St. Louis, f.o.b.	26.00
Birmingham, del'd	23.21
Lone Star, Tex., f.o.b.	18.50

ELECTRICAL SHEETS

22 Ga. H-R cut length F.o.b. Mill Cents Per Lb.	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
Beach Bottom *W5*	.....	7.85	9.10	9.90	10.45	11.00	11.70
Brackenridge *A3*	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Granite City *G2*	.....	8.55	9.80	.....	.....	.....	.....
Ind. Harbor *I3*	7.35	7.85	9.10	.....	.....	.....	.....
Mansfield *E2*	7.35	7.85	9.10	9.90	.....	.....	.....
Newport, Ky. *N5*	7.35	7.85	9.10	9.90	10.45	.....	.....
Niles, O. *N3*	7.35	7.85	.....	.....	.....	.....	.....
Vandergrift *U1*	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Warren, O. *R3*	7.35	7.85	9.10	.....	.....	.....	.....
Zanesville *A7*	7.35	7.85	9.10	9.90	10.45	11.00	11.70

CAST IRON WATER PIPE

Per Net Ton

6 to 24-in., del'd Chicago	$110.30 to $113.80
6 to 24-in., del'd N.Y.	113.50 to 114.50
6 to 24 in., Birmingham	96.50 to 101.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	$128.00 to $130.00

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. f.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	23.93	28.14	23.19	27.28
	2½	12	32.17	37.83	31.19	36.67
	2	12	35.78	42.11	34.69	40.82
	3½	11	44.72	52.65	43.36	51.05
	4	10	55.52	65.31	53.83	63.32
National Tube	2	13	22.81	27.94	22.23	.....
	2½	12	31.28	38.31	30.51	.....
	3	12	35.87	43.93	34.98	.....
	3½	11	42.56	52.12	.....	.....
	4	10	54.02	66.16	.....	.....
Pittsburgh Steel	2	13	.....	28.58	.....	.....
	2½	12	32.16	36.19	.....	.....
	3	12	36.87	44.93	.....	.....
	3½	11	43.76	53.32	.....	.....
	4	10	.....	67.68	.....	.....

C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT				
	0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Bridgeport, Conn. *S7*	5.80	7.65	8.25	10.20	12.50
Carnegie, Pa. *S9*	.....	7.65	8.25	10.20	12.50
Cleveland *A5*	5.10	7.30	8.25	10.20	12.50
Detroit *D1*	6.45	7.50	8.10	.....	.....
New Castle, Pa. *B4*	5.80	7.65	8.25	10.20	.....
New Haven, Conn. *D1*	6.70	7.60	8.20	.....	.....
Sharon, Pa. *S1*	5.80	7.65	8.25	10.20	12.50
Trenton, N. J. *R4*	.....	7.95	8.55	10.50	12.80
Warren, Ohio *T4*	6.20	7.65	8.25	10.20	12.50
Weirton, W. Va. *W3*	5.80	7.65	8.25	10.20	12.50
Worcester, Mass. *A5*	5.40	7.60	8.55	10.50	12.80
Youngstown *C5*	.....	7.65	8.25	10.20	12.50

* Sold on Pittsburgh base.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Bl. Furnace Silvery
Bethlehem *B3*	56.50	57.00	57.50	58.00	.....	.....
Birmingham *R3*	50.88	51.38	.....	.....	.....	.....
Birmingham *W9*	50.88	51.38	.....	.....	.....	.....
Birmingham *S5*	50.88	51.38	.....	.....	.....	.....
Buffalo *R3*	54.50	55.00	55.50	.....	.....	.....
Buffalo *H1*	54.50	55.00	55.50	.....	.....	66.75
Buffalo *W6*	54.50	55.00	55.50	.....	.....	.....
Chicago *I4*	54.50	55.00	55.00	55.50	.....	.....
Cleveland *A5*	54.50	55.00	55.00	55.50	59.50	.....
Cleveland *R1*	54.50	55.00	55.00	.....	.....	.....
Daingerfield, Tex. *L3*	50.50	51.00	51.00	.....	.....	.....
Duluth *I4*	54.50	55.00	55.00	55.50	.....	.....
Erie *I4*	54.50	55.00	55.00	55.50	.....	.....
Everett, Mass. *M6*	.....	59.50	60.00	.....	.....	.....
Fontana *K1*	60.50	61.00	.....	.....	.....	.....
Geneva, Utah *C7*	54.50	55.00	.....	.....	.....	.....
Granite City, Ill. *K3*	56.40	56.90	57.40	.....	.....	.....
Hubbard, Ohio *Y1*	54.50	55.00	55.00	.....	.....	.....
Jackson, Ohio *J1,G1*	.....	.....	.....	.....	.....	65.50
Minnequa *C6*	56.50	57.50	57.50	.....	.....	.....
Monessen *P6*	56.50	.....	.....	.....	.....	.....
Neville Island *P4*	54.50	55.00	55.00	55.50	.....	.....
Pittsburgh *U1*	54.50	.....	.....	55.50	.....	.....
Sharpsville *S3*	54.50	55.00	55.00	55.50	.....	.....
Steelton *B3*	56.50	57.00	57.50	58.00	62.50	.....
Swedeland *A2*	58.50	59.00	59.50	60.00	.....	.....
Toledo *I4*	54.50	55.00	55.00	55.50	.....	.....
Troy, N. Y. *R3*	56.50	57.00	57.50	58.00	62.50	.....
Youngstown *Y1*	54.50	55.00	55.00	55.50	.....	.....
N. Tonawanda, N. Y. *T1*	.....	55.00	55.50	.....	.....	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery Iron: Add $1.50 per ton net for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. $1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

—Miscellaneous Prices—

(Effective May 12, 1953)

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer *U1*	4.075	5.00	5.075	....	....	....	....
Chicago *R3*	....	....	....	6.65	....	....	....
Cleveland *R3*	....	....	....	....	....	....	....
Ensley *T2*	4.075	5.00	....	....	....	....	....
Fairfield *T2*	....	5.00	....	6.65	....	4.925	....
Gary *U1*	4.075	5.00	....	....	....	4.925	....
Ind. Harbor *I3*	4.075	....	5.075	6.80	....	4.925	....
Johnstown *B3*	....	4.55	....	....	....	....	....
Joliet *U1*	....	5.00	5.075	....	....	....	....
Kansas City *S2*	....	....	....	....	....	....	....
Lackawanna *B3*	4.075	4.55	5.075	....	....	4.925	....
Lebanon *B3*	....	....	....	6.80	....	....	....
Minnequa *C6*	4.075	5.05	5.075	6.80	....	4.925	10.00
Pittsburgh *R3*	....	....	....	....	....	....	....
Pittsburgh *O1*	....	....	....	....	....	....	....
Pittsburgh *P5*	....	....	....	....	....	....	....
Pittsburgh *J3*	....	....	....	6.65	....	....	....
Pitt'g, Cal. *C7*	....	....	....	....	....	5.075	....
Seattle *B2*	....	....	....	7.30	....	5.075	....
Steelton *B3*	4.075	....	5.075	....	....	4.925	....
Struthers *Y1*	....	....	....	6.65	....	....	....
Torrance *C7*	....	....	....	....	....	5.075	....
Youngstown *R3*	....	....	....	6.65	....	....	....

TOOL STEEL

F.o.b. mill

Add 4.7 pct to base and extras.

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.505
18	4	1	—	5	$2.13
18	4	2	—	—	$1.65
1.5	4	1.5	8	—	31.0¢
6	4	2	6	—	96.5¢

High-carbon chromium ..... 63.5¢
Oil hardened manganese ..... 35¢
Special carbon ..... 32.5¢
Extra carbon ..... 27¢
Regular carbon ..... 23¢

Warehouse prices on and east of Mississippi are 3.5¢ per lb. higher. West of Mississippi, 5.5¢ higher.

CLAD STEEL

Add 4.7 pct to base and extras.

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa. *L4*	*29.5	
Washington, Pa. *J2*	*29.5	
Claymont, Del. *C4*	*29.50	
Conshohocken, Pa. *A2*		*27.50
New Castle, Ind. *I2*	*29.77	*26.74
Nickel-carbon		
10 pct Coatesville, Pa. *L4*	32.5	
Inconel-carbon		
10 pct Coatesville, Pa. *L4*	40.5	
Monel-carbon		
10 pct Coatesville, Pa. *L4*	33.5	
No. 302 Stainless copper stainless, Carnegie, Pa. *A4*		77.00
Aluminized steel sheets, hot dip, Butler, Pa., *A7*		7.75

* Includes annealing and pickling, ‡ sandblasting.

ELECTRODES

Cents per lb, f.o.b., plant threaded electrodes with nipples, unboxed

Diam. in In.	Length in In.	Cents Per Lb.
	GRAPHITE	
24	84	18.70
17, 18, 20	60, 72	18.70
8 to 16	48, 60, 72	18.70
7	48, 60	20.50
6	48, 60	21.95
4, 5	40	22.53
3	40	23.68
2½	24, 30	24.26
2	24, 30	26.57
	CARBON	
40	100, 110	8.45
35	65, 110	8.45
30	65, 84, 110	8.45
24	72 to 104	8.45
20	84, 90	8.45
17	60, 72	8.45
14	60, 72	8.45
10, 12	60, 72	9.02
8	60	9.30
	60	9.58

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; Effective CaF_2 content:

72½% $44.00
70% or more 42.50
60% or less 38.00

Beryllium copper makes sensitive phonograph needles, sturdy record changer parts, reliable TV sets. This home entertainment center illustrates the wide use made of versatile Berylco. For parts and key numbers, see below.

A NEW WAY TO SOLVE OLD PROBLEMS

A proved design material, beryllium copper has enabled many difficult or "impossible" jobs to become standard production items

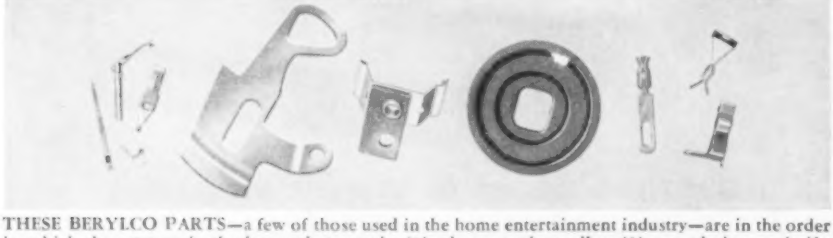
It took nearly a century and a half for the element beryllium to emerge from its position of obscurity in the laboratory, where it had been hidden since its discovery in the 1790s. In the last 20 years, however, it has written a brilliant commercial history as an alloy of copper.

Beryllium does wonders for copper. Through a simple heating process, for example, beryllium copper can be given the strength and hardness of ordinary steel. Yet it still retains a high degree of electrical and thermal conductivity.

The unique qualities of Berylco beryllium copper—its combination of strength and conductivity, its elasticity, its fatigue and endurance strength, its ready formability—have enabled manufacturers in nearly every industry to make better products cheaper. It takes only a glance at this home entertainment center—a far cry from the player piano in the 1910 parlor—to see how widely, and for what various reasons, Berylco has been used.

Beryllium copper is no longer a rare alloy. Domestic mining has reduced dependence on overseas sources. Production facilities have been enlarged. And manufacturers are fortunate in being able to draw on the scientific knowledge and practical know-how of the world's largest producer of beryllium copper. Write THE BERYLLIUM CORPORATION, Dept. E, Reading 6, Pa.

Tomorrow's products are planned today—with Berylco beryllium copper



THESE BERYLCO PARTS—a few of those used in the home entertainment industry—are in the order in which they appear in the large photograph: (1) phonograph needles; (2) record changer knife; (3) TV tuner clip; (4) camera baffle; (5) tube socket contact; (6) tuner clips.

—Miscellaneous Prices—

(Effective May 12, 1953)

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched—Sq.

Pct Off List

	Less Keg Reg.	K.	Less Keg Hvy.	K.
½ in. & smaller.	10	24	10	24
9/16 in. & ⅝ in.	8	21	1	16
¾ in. to 1½ in. inclusive	4	18	+4	12
1⅝ in. & larger.	2	17	+4	12

Nuts, Hot Pressed—Hexagon

½ in. & smaller.	22	33	18	30
9/16 in. & ⅝ in.	12	25	1	16
¾ in. to 1½ in. inclusive	8	21	+3	13
1⅝ in. & larger.	4	18	+3	13

Nuts, Cold Punched—Hexagon

½ in. & smaller.	22	33	18	30
9/16 in. & ⅝ in.	19	31	13	26
¾ in. to 1½ in. inclusive	15	27	8	21
1⅝ in. & larger.	2	17	+4	12

Nuts, Semi-Finished—Hexagon

	Reg.		Hvy.	
½ in. & smaller.	33	43	26	37
9/16 in. & ⅝ in.	27	38	19	31
¾ in. to 1½ in. inclusive	21	33	11	25
1⅝ in. & larger.	5	19	net	15
	Light			
7/16 in. & smaller	33	43		
½ in. thru ⅝ in.	26	37		
¾ in. to 1½ in. inclusive	18	30		

Stove Bolts *Pct Off List*

Packaged, steel, plain finished 44½—10
Packaged, plain finish ..... 35½—10
Bulk, plain finish** 59*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**inc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets *Base per* 100 lb

½ in. & larger $8.80

Pct Off List

7/16 in. and smaller 30

Cap and Set Screws

(In bulk) *Pct Off List*

Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright	40
¾ in. thru 1 in. up to & including 6 in.	26
¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat	43
¾ in. thru 1 in. up to & including 6 in.	33
Milled studs	17
Flat head cap screws, listed sizes ...	12
Fillister head cap, listed sizes	7
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	37

Machine and Carriage Bolts

Pct Off List

	Less Case	C.
½ in. & smaller x 6 in. & shorter	11	25
9/16 in. & ⅝ in. x 6 in. & shorter	15	27
¾ in. & larger x 6 in. & shorter	14	26
All diam. longer than 6 in...	8	22
Lag, all diam. x 6 in. & shorter	19	31
Lag, all diam. longer than 6 in.	16	28
Plow bolts	30	...

—Miscellaneous Prices—

(Effective May 12, 1953)

REFRACTORIES

Fire Clay Brick	Carloads, per 1000
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.25)	$99.30
No. 1 Ohio	92.40
Sec. quality, Pa., Md., Ky., Mo., Ill.	92.40
No. 2 Ohio	83.15
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.60)	14.40

Silica Brick	
Mt. Union, Pa., Ensley, Ala.	$99.30
Childs, Pa.	103.95
Hays, Pa.	105.10
Chicago District	122.40
Western Utah	116.55
California	122.85
Super Duty, Hays, Pa., Athens, Tex., Chicago	116.65
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	17.30
Silica cement, net ton, bulk, Hayes, Pa.	19.60
Silica cement, net ton, bulk, Ensley, Ala.	18.45
Silica, cement, net ton, bulk, Chicago Distirct	18.45
Silica cement, net ton, bulk, Utah and Calif.	25.95

Chrome Brick	Per net ton
Standard chemically bonded Balt., Chester	$86.00
Burned, Balt., Chester	80.00

Magnesite Brick	
Standard Baltimore	$109.00
Chemically bonded, Baltimore	97.50

Grain Magnesite	St. ¾-in. grains
Domestic, f.o.b. Baltimore in bulk fines removed	$64.40
Domestic, f.o.b. Chewalah, Wash., in bulk	38.00
in sacks	43.70

Dead Burned Dolomite	
F.o.b. producing points in Pennsylvania, West Virginia and Ohio per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢	$13.75

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices through June 30, 1953, delivery.

	Gross Ton
Openhearth lump	$10.95
Old range, bessemer	10.10
Old range, nonbessemer	9.95
Mesabi, bessemer	9.85
Mesabi, nonbesesmer	9.70
High phosphorus	9.70

Prices based on upper Lake rail freight rates, Lake vessel freight rates, handling and unloading charges, and taxes thereon, in effect on Dec. 31, 1952. Increases or decreases after such date are for buyer's account.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f. New York, ocean bags	10.9¢
Canadian sponge iron, del'd. in East	12.0¢
Domestic sponge iron, 98+% Fe, carloads lots	15.5¢ to 17.0¢
Electrolytic iron, annealed, 99.5+% Fe	44.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	60.0¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	53.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 mieron, 98%, 99.8+% Fe	83.0¢ to $1.48
Aluminum	31.5¢
Brass, 10 ton lots	30.00¢ to 33.25¢
Copper, electrolytic	10.75¢ plus metal value
Copper reduced	10.00¢ plus metal value
Cadmium, 100-199 lb.	95¢ plus metal value
Chromium, electrolytic, 99% min., and quantity, del'd	$3.50
Lead	7.5¢ to 12.0¢ plus metal value
Manganese	57.0¢
Molybdenum, 99%	$2.75
Nickel, unannealed	88.0¢
Nickel, annealed	95.0¢
Nickel, spherical, unannealed	92.0¢
Silicon	33.5¢
Solder powder	7.0¢ to 9.0¢ plus met. value
Stainless steel, 302	83.9¢
Stainless steel, 316	$1.10
Tin	14.04¢ plus metal value
Tungsten, 99% (65 mesh)	$5.50
Zinc, 10 ton lots	23.0¢ to 30.5¢

—Ferroalloy Prices—

(Effective May 18, 1953)

Ferrochrome

Contract prices, cents per pound, contained CR, lump size, bulk in carloads delivered. (65-72% Cr, 2% max. Si.)

0.06% C	34.50	0.20% C	33.50
0.10% C	34.00	0.50% C	33.25
0.15% C	33.75	1.00% C	33.00
2.00% C			32.75
65.69% Cr, 4-9% C			24.75
62-66% Cr, 4-6% C, 6-9% Si			25.60

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	25.85
Ton lots	28.00
Less ton lots	29.50

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	$1.18
0.50% max. C	1.14
9 to 11% C	1.11

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 25.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 25.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, dump delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe

Carloads	19.00
Ton lots	22.10
Less ton lots	23.60

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	20.00
Ton lots	22.30
Less ton lots	23.30

CMSZ

Contract price, cents per lb of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	20.75
Less ton lots	22.00

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ⅛ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50
Less ton lots	17.75

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.00
Ton lots to carload packed	19.00
Less ton lots	20.50

Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Ashtabula, O.	$225
F.o.b. Johnstown, Pa.	227
F.o.b. Sheridan, Pa.	225
F.o.b. Philo, Ohio	225

Add $2.80 for each 1% above 82%, subtract $2.80 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	12.45
Ton lots, packed	14.05
F.o.b. Etna, Clairton, Pa., per net ton	$200

Add $2 for each 1% above 76%, subtract $2 for each 1% below 74%.

Ferroalloy Prices

(Effective May 12, 1953)

Spiegeleisen

Contract prices gross ton; lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$84.00	$85.00
Pgh. or Chicago	84.00	85.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	36.95
Ton lots	38.45

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	30.00
Ton lots	32.00
Less ton lots	34.00 to 37.00
Premium for hydrogen-removed metal	1.50

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	28.45	30.30	31.50
0.07% max. C	27.95	29.80	31.00
0.15% max. C	27.45	29.30	30.50
0.30% max. C	26.95	28.80	30.00
0.50% max. C	26.45	28.30	29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ..... 21.35¢

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.

Carload bulk	11.40
Ton lots	13.05
Briquet contract basis carlots, bulk delivered, per lb of briquet	12.65
Ton lots, packed	14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $95.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00. Add $1.055 per ton for each additional 0.50% Si up to and including 17%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	18.00
97% Si, 1% Fe	18.50

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk	6.95
Ton lots	8.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

25% Si	20.00	75% Si	14.30
50% Si	12.40	85% Si	15.55
90-95% Si			17.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrovanadium

35-55% contract basis, delivered, per pound, contained V.

Openhearth	$3.00-$3.10
Crucible	3.10- 3.20
High speed steel (Primos)	3.30- 3.35

Ferroalloy Prices

(Effective May 12, 1953)

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.
Carloads ..... 9.9¢
Ton lots 11.30
Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.15
Ferrocolumbium, 50-60% 2 in. x D contract basis, delivered per pound contained Cb.
Ton lots $4.90
Less ton lots 4.95
Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30% C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta $3.75
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo. $1.32
Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton $65.00
10 tons to less carload $75.00
Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.35
Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots 1.55
Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton $177.00
Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. $4.45
Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. $1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.13
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound
Carload, bulk lump ..... 14.50¢
Ton lots, bulk lump ..... 15.75¢
Less ton lots, lump ..... 16.25¢
Vanadium Pentoxide, 86-89% V_2O_5 contract basis, per pound contained V_2O_5 ..... $1.28
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
Ton lots ..... 21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.
Carload, bulk ..... 7.00¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B $5.25
Bortam, f.o.b. Niagara Falls
Ton lots, per pound ..... 45¢
Less ton lots, per pound ..... 50¢
Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed.
ton lots, per pound ..... 10.00¢
Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots $1.20
F.o.b. Wash., Pa.; 100 lb up
10 to 14% B ..... .85
14 to 16% B 1.20
16% min. B 1.50
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.
No. 1 ..... $1.00
No. 6 ..... 68¢
No. 79 ..... 50¢
Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd
Ton lots $1.46
Less ton lots 1.57
Nickel - Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered
Less ton lots $1.30
Silcas, contract basis, delivered.
Ton lots ..... 45.00¢

The Clearing House

NEWS OF USED AND REBUILT MACHINERY

Price Counts . . . Price is becoming the dominant factor in the used and rebuilt machinery market in Detroit. With Office of Price Stabilization controls no longer in effect and with Korea-caused buying about finished, the market is approaching normal.

Good toolroom equipment is scarce and high priced. This is regarded as one of the few market conditions that might be considered abnormal. Production equipment is plentiful, but demand is not strong. While toolroom mills are hard to get and priced high, production mills are available at reasonable prices.

Can Stay Healthy . . . Because of this situation, some dealers regard the market as weak. Others, while conceding that demand is not strong, say there is still enough business to keep them healthy. They have to be careful in their purchases and use initiative in selling, but good sales records are possible, some used machinery dealers say.

Some Detroit dealers and brokers have been attending auctions in the East, since there are no local sales of any significance to the market. Detroiters have been active buyers at these sales which indicates that the Motor City market is stronger than it is in the East, particularly the New England area.

Use Bid Lists . . . With no important auctions being held, Detroit used tool men are relying on booming auto plants as their best equipment source. Auto plants are continually replacing machinery and from time to time issue lists of their used equipment for bids. These lists are actively sought by the trade and bidding is usually spirited.

Buying in the area is keyed directly to price—if it's not right, there's no sale. Only a few tools such as jig borers, vertical mills and Blanchard surface grinders bring old ceiling prices. Many dealers never raised any of their prices over ceiling levels when controls were abandoned around mid-March.

Dealers Were Right . . . It is estimated that the general price level is down about 10 pct since the end of OPS, proof of the dealers' frequently voiced belief that price ceilings for quite some time served as a price support rather than as a control.

Another result of the sluggish condition of the used machinery market is the slump in imports. Because of the improved supply of U. S. tools and uncertainty about their own business, buyers are not interested in looking at foreign tools.

Buy With Care . . . With no more defense orders to work on, shops are buying for their own needs and therefore are very cautious about their purchases. Few expect their 1953 business to be as good as it was last year.

New officers of the Detroit chapter of the Machinery Dealers National Assn., elected at the April meeting, are: Thomas Johnston, Thomas Johnston Co., chairman; Robert Foster, Foster Machinery Co., vice-chairman; Gordon McCutcheon, R. A. Vine Co., secretary-treasurer; and William Howarth, International Machinery Co., delegate to the national nominating committee.

Cut Inventories . . . Machinery dealers around the Cleveland area report their inventories are in bad shape as most have more antiquated stock than they want. One dealer has cut his inventory about 25 pct but would like to pare down even more.

Surest sign of slowness of the Cleveland market is the easing in demand for boring mills, radial drills and also various types of late model turret lathes.